BLUE BOOK & CATALOG

For the Soap, Insecticide, Disinfectant and Allied Industries

1937

THE CENTRAL SOURCE FOR SOAP PERFUMES

● Because of our extensive laboratory facilities, large staff of technical specialists and comprehensive variety of products, more and more soap manufacturers are using Givaudan-Delawanna, Inc. as their main source of supply for aromatics. We stand ready at all times to assist in the solution of your aromatic problems. Check the list of products below and make a note of the Givaudan branch office nearest to you.



Acetophenone
Aldehydes
Amyl Benzoate
Amyl Cinnamic Aldehyde
Amyl Salicylate
Aubepine Liquid
Benzaldehyde F. F. C.
Benzophenone
Benzyl Acetate
Benzylidene Acetone
Bromstyrol
Cinnamic Alcohol
Citral S. S.
Citrene
Citrene No. 2
Citronellol
Coumarin
Cyclamen Aldehyde
Diphenyl Oxide
Eugenol
Geraniol (Soap)
Geranium Synthetic No. 1086
Geranyl Acetate
Heliotropine
Irisone Pure
Isobutyl Benzoate
Isoeugenol
Laurine (Hydroxycitronellol)
Linalyl Acetates
Methyl Benzoate
Methyl Cinnamate
Methyl Coumarin
Methyl Heptin Carbonate
Methyl Ionones
Moskene
Musk Ambrette 100%
Musk Ketone 100%
Musk Xylol 100%
Oil Camphor Sassafrassy
Oil Sassafras Artificial
Phenyl Acetic Acid
Safrol
Terpineol Prime No. 1

SERIES "A" PERFUMES FOR SOAPS
Six delightful scents—Lilac, Jasmin, Bouquet, Rose, Lavender, Cologne.

All the foregoing basic soap perfuming materials of high quality are manufactured at our plant at Delawanna, N. J. See page 37 for further news of Givaudan-Delawanna products, especially spray and disinfectant deodorants.

GIVAUDAN
DELAWANNA INC.
80 Fifth Avenue, New York, N. Y.

BRANCH OFFICES: Philadelphia, Los Angeles, Cincinnati, Detroit, Dallas, Baltimore, New Orleans, Chicago, San Francisco, Seattle, Montreal, Havana.

Aromatic Chemicals





IN the important matter of securing dependable Aromatic Chemicals call on Ungerer. Decades of experience in catering to the needs of soapmakers everywhere, assure you of receiving that expert attention which you require.

Alpha Amyl Cinnamic Aldehyde
Amyl Salicylate
Benzophenone
Benzyl Salicylate
Cinnamic Alcohol
Citronellol
Coumarin
Di Hydroxycitronellal
Di Phenyl Methane
Di Phenyl Oxide
Geraniol
Heliotropine
Iriszone 100%
Iriszone Beta Extra
Iriszone "S"
Iso Bornyl Acetate
Linalool
Linalyl Acetate
Methyl Para Cresol
Musk Ambrette
Musk Ketone
Musk Xylene
Nerolin
Odanol (Ionone Ketone)
Odanol "S" (Ionone Ketone)
Phenylethyl Alcohol
Styralyl Acetate
Terpinyl Acetate
Terpineol
Virone (Alpha Beta Extra)
Virone Alpha
Virone Beta
Virone Alpha Water White

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Branches: Chicago, Boston, St. Louis, Dallas, Philadelphia, San Francisco, Los Angeles, Toronto

DU PONT
REG. U.S. PAT. OFF.

AROMATICS

for the soap manufacturer

CINNAMIC ALCOHOL
LAVENDER SYNTHETIC
GERANYL ACETATE
METHYL RHODIONE FOR SOAP
VIOLET KETONE
MUSK XYLOL
CEDROL
METHYL RHODIONE EXTRA
GERANIUM ARTIFICIAL
ISOBORNYL ACETATE
GERANIOL FOR SOAP
GERANIOL STANDARD
GERANIOL EXTRA
CITRAL
MUSK AMBRETTE
ROSEMARY ARTIFICIAL
BENZOPHENONE
RHODIONE FOR SOAP
RHODIONE AB
AMYL SALICYLATE
HYACYLENE P and S (Dimethyl Acetal of Phenyl Acetaldehyde)
MUGOL (Dimethyl Acetal of Hydroxy-citronellal)
METHYL ACETOPHENONE
HYDROXYCITRONELLAL
TERPINYL ACETATE EXTRA
DIMETHYL HYDROQUINONE
COUMARIN
BENZYL ALCOHOL PURE
CITRONELLOL EXTRA
BENZYL ACETATE
BERGAMOT ARTIFICIAL
ACETOPHENONE
LINALYL ACETATE
TERPINEOL
MUSK KETONE

ALSO the famous SCUR products manufactured by Société des Usines Chemiques, Rhône-Poulenc, Paris, France

● To insure quality in a finished product, it is essential to use the finest ingredients obtainable and to maintain effective control throughout its production. When you use du Pont Aromatics, you are assured of the uniformity and high quality which permit proper control in the manufacture of fine soaps.

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FINE CHEMICALS DIVISION
WILMINGTON, DELAWARE

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NEW YORK CITY

7 SOUTH DEARBORN STREET
CHICAGO, ILL.

BLUE BOOK and CATALOG

for the Soap, Insecticide, Disinfectant and Allied Industries



Ninth Edition

1937



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Appendix .....Page 141

Published by

MAC NAIR-DORLAND COMPANY, INC.

254 WEST 31ST STREET NEW YORK

KOPPERS

KOPPERS is one of the important sources of chemical raw materials such as Tar Acids, Cresol, Phenol, Cresylic Acid, Tar Acid Oils and Neutral Hydrocarbon Oil. But it is much more than that. It builds plants in which many of these materials are produced and refined. It makes roofing and waterproofing materials for the protection of industrial plants, and Tarmac road materials for the paving of plant roads. It mines bituminous coal for fuel and for processing. It produces coke. Koppers is the only manufacturer of Fast's self-aligning Couplings, invaluable in power shaft connections. It builds tanks and does plate work; manufactures gas and water valves and fire hydrants. It produces piston rings of every size for every type of gasoline, Diesel and steam engines, and builds and reconditions lighters, tankers and ocean vessels. It produces creosote and applies preservative treatments to lumber, piling, posts, etc.

KOPPERS COMPANY
PITTSBURGH, PA.

TAR ACIDS
Cresol, U. S. P.
Phenol
Cresylic Acid
98% to 100%, Straw Color
Tar Acid Oils
Neutral Hydrocarbon Oil

OTHER KOPPERS PRODUCTS

Benzol (all grades)
Toluol (Industrial and Nitration)
Xylol (10° and Industrial)
Solvent Naphtha (including High Flash)
Phenol (82% and 90% Purity)
Naphthalene
Shingle Stain Oil
Refined Tars
Pitch Coke
Industrial Coal Tar Pitches
Flotation Oils
Creosote
Tanks and Tank Work
Benzol Recovery Plants
Naphthalene Removal Apparatus
Phenol Removal Apparatus
By-Product Gas Plants
By-Product Recovery Apparatus
Sulphur Recovery Apparatus
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Waterproofing and Dampproofing Materials
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Bituminous Base Paints
Coal
Coke
Fast's self-aligning Couplings
Fire Hydrants
Piston Rings
Gas, Air and Water Valves
Treated Lumber
Special Machinery

PRODUCTS OF
THE WHITE TAR COMPANY
OF NEW JERSEY, INC.

Refined Naphthalene
Crushed, Crystals, Powder, Lump, Chips, Flakes
For use in manufacture of deodorizing blocks, moth preventives and other insecticides.
Also Naphthalene in Balls, Blocks, Tablets.

Coal Tar Disinfectants. Co-efficients 2 to 20 plus, F. D. A. method.

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Crystal and Block Deodorants · Liquid Insecticides
Deodorizing Blocks
Pressed Naphthalene or Paradichlorobenzene. Various sizes and shapes. Perfumed and plain. Bulk industrial packages, retail packages.

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Foreword

1937 c.1

THE BLUE BOOK and CATALOG of the Soap, Insecticide, Disinfectant and Allied Industries is intended as a complete buying guide for these industries—not only for manufacturers of these products but also for those who buy them in bulk for resale. It is the purpose of the publishers to provide as complete a buying service as possible, and suggestions will be welcomed from users of the book as to how it may be improved or expanded in scope.

The 1937 edition is divided into three sections. The first, starting on page 5, contains the condensed catalogs of a representative group of supply houses, arranged in alphabetical order for the convenience of users.

Section two, starting on page 77, gives buyer's guide listings for a complete list of the raw materials, machinery and equipment purchased by manufacturers of soaps and sanitary products. This section also gives sources of supply for bulk and private brand products of all types. These listings are not intended of course as a complete directory of the soap and sanitary products industry, as only those firms are listed which specialize in selling the jobbing trade.

Section three contains a number of reference articles, as well as a review of governmental specifications for the purchase of soaps and sanitary products. Another valuable buying aid for the purchaser of these products is a series of articles by leading manufacturers advising the jobber or bulk buyer what he should look for in and how he should judge various soaps, disinfectants, polishes, etc. Latest testing procedure for a variety of products is outlined completely.

In a work of this type it is unfortunate that errors are unavoidable in the extensive listings. If the name of your firm has been omitted or listed incorrectly, the publishers will greatly appreciate being notified.

THE PUBLISHERS

January, 1937

ORBIS
ESSENTIAL OILS

OIL ANISE
OIL BAY
OIL BERGAMOT
OIL CAMPHOR—WHITE
OIL CAMPHOR—SASSAFRASSY
OIL CASSIA—REDISTILLED
OIL CEDARLEAF
OIL CEDARWOOD
OIL CITRONELLA JAVA
OIL CITRONELLA CEYLON
OIL CLOVES
OIL EUCALYPTUS
OIL LEMON—ITALIAN
OIL LEMON—CAL.
OIL LAVENDER FLOWERS
OIL LEMONGRASS
OIL PEPPERMINT
OIL PETITGRAIN
OIL PINENEEDLES—SIBERIAN
OIL PHELLANDRENE
OIL ROSEMARY
OIL SASSAFRAS—ARTIFICIAL
OIL SASSAFRAS—NATURAL
OIL SPEARMINT
OIL SPIKE LAVENDER
OIL THYME—RED
OIL THYME—WHITE
OIL YLANG YLANG—MANILA
OIL YLANG YLANG—BOURBON

AROMATIC CHEMICALS

AMYL CINNAMIC ALDEHYDE
ANETHOL
BENZYL ACETATE
BENZYL ALCOHOL
BENZYL BENZOATE
CARVACROL
CINNAMIC ALCOHOL
CITRAL
CITRONELLOL
EUCALYPTOL
EUGENOL
GERANIOL
SAFROL
STEARIC ACID
THYMOL
CHLORTHYMOL

MEMO

To Manufacturers of SOAP, INSECTICIDES and DISINFECTANTS

ORBIS are the recognized source for nationally accepted FINE AMERICAN AND EUROPEAN ESSENTIAL OILS, AROMATIC CHEMICALS and GUM TRAGACANTH (whole or powdered)

WRITE FOR SAMPLES!

ORBIS
PRODUCTS CORPORATION
215 PEARL ST., NEW YORK – Factory, NEWARK, N. J.

Catalog Section

●

BLUE BOOK and CATALOG

for the Soap, Insecticide, Disinfectant

and Allied Industries

for 1937

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Condensed Catalogs of Firms Supplying Raw Materials, Machinery and Equipment to Makers of Soaps, Insecticides, Disinfectants, Polishes and Allied Products.

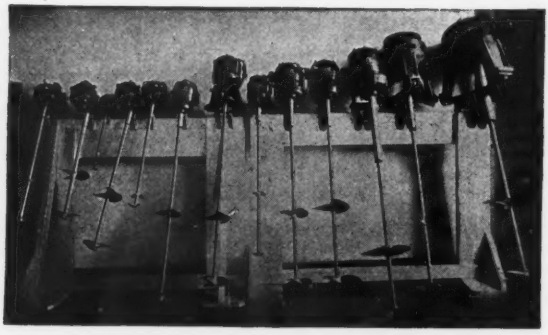
Hy-Speed EQUIPMENT

for SPEED and ECONOMY in the processing of

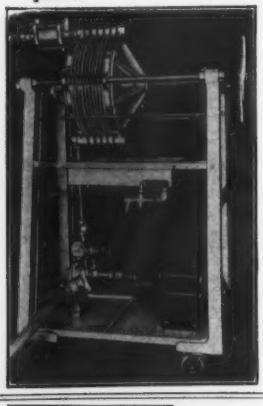
Soaps . Disinfectants . Insecticides . Chemicals . Lyes

MIXING

A mixer with the most effective combination of power, speed, propeller size, pitch, and area — a mixer that is designed correctly, balanced perfectly, and constructed ruggedly — a mixer that clamps to any tank or other container you now have — is the one that will do your mixing jobs most thoroughly and at a low operating cost. Let a Hy-Speed Mixer do those mixing jobs in your plant.



Tell us about your mixing problems and we will gladly offer you our suggestions or recommendations. There's no obligation whatsoever.



FILTERING

for sediment-free, attractive-looking liquid products.

If you're intent on turning out a liquid product that is absolutely sediment-free (and will stay that way)—a product that really stands out in attractiveness, you'll be interested in the results obtained with Hy-Speed Ultra Fine Disc Filters.

Hy-Speed Asbestos Discs, the filtering media used, remove every bit of cloud and minute foreign matter and produce a clear brilliant liquid.

Hy-Speed Filters are available in all sizes for any filtering capacity you desire from 1½ G. P. M. to 60 G. P. M. (5 G. P. M. 10-Disc Filter is shown at left).



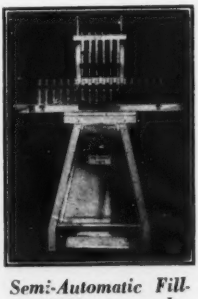


ABOVE, improved Siphon Filler: RIGHT, Portable Vacuum Filler.

BOTTLE FILLING

any size or type container, 1 oz. to gals.

There's a complete line of Hy-Speed Vacuum, Siphon and Gravity Bottle Fillers for handling any production capacity you desire on bottles, cans, or jugs from 1 oz. to gals. Write for full details.

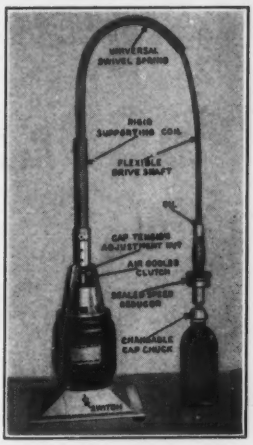


Semi-Automatic Filler—2000 qts. per hr.

Etc.

CAPPING

assures positively airtight, leakproof containers.



If you are using screw caps on your bottles, cans, or other containers, here's an inexpensive, simplified method of tightening them absolutely securely.

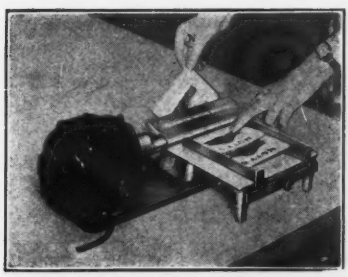
The Hy-Speed Portable Screw Capper is a positive safeguard against waste and rejected shipments caused by leaky bottles that have been capped by uncertain, haphazard methods.

HANDLES ANY SIZE CAP

Instantly adjustable for handling any size cap, the unit is ideal for steady production work or for numerous capping jobs in your plant involving a large variety of caps and bottle sizes and styles.

COMPACT — SIMPLIFIED — INEXPENSIVE

The unit is compact and self contained; it is portable and can be used anywhere in the plant as necessity requires; it is built for continuous duty and costs but a few cents a day to operate.



Every piece of Hy-Speed equipment is backed by the Alsop guarantee of perfect, satisfactory performance.

LABELING

a neat, inexpensive method for all containers.

The Hy-Speed Labelit applies a smooth coating of glue or gum (of any desired thickness) to labels of all types and styles. It comprises a most inexpensive method of fast, neat labeling.

Gear driven for dependability; completely covered for cleanliness; instantly disassembled for ease of cleaning; quick, easy adjustments for smooth operation on different labeling jobs.

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By Dr. E. G. Thomssen
and
C. R. Kemp

A practical book covering the manufacture of

TOILET SOAPS	SHAVING SOAPS
LAUNDRY SOAPS	SHAMPOOS
SOAP CHIPS	LIQUID SOAPS
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FLOATING SOAPS	SCOURING POWDERS
MEDICINAL SOAPS	MECHANIC'S HAND SOAPS
TEXTILE SOAPS	GLYCERINE RECOVERY

and numerous other products and processes in soap manufacture, including the refining and bleaching of oils, fats, and greases, etc., other raw materials, sulfonated oils, etc.

A practical book by practical soap men . . . 450 pages, 60 full page illustrations, including plant and equipment diagrams, cloth binding.

OFF THE PRESS . . . MARCH 1, 1937

$7.50 per copy, postage paid.

Edition limited

MAC NAIR-DORLAND COMPANY
Publishers

254 West 31st Street **New York**



Office:
180 Madison Avenue
New York, N. Y.

Factory:
West Haverstraw, N. Y.

ORGANIC and AROMATIC CHEMICALS

for Soaps, Perfumes, Pharmaceuticals, Cosmetics, Denaturing, Insecticides, Fumigation and other purposes

Phenyl Ethyl Alcohol
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(Beta-Naphthol Ethyl Ether)

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A neutral Spreader and Carrier of Pyrethrum Extract for Agricultural Sprays

Cresylic Acid **Tar Acid Oil**
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which include

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Concretes, absolutes of Jasmin, Orange, Tuberose, etc., of high quality.

—Haebler, Inc.

SOAP PERFUMING demands special abilities and we have the background in that branch. A large number of soap perfumes are now available, ranging in price from $2.00 up. *State requirements and send for samples.*

van Ameringen-Haebler, Inc.

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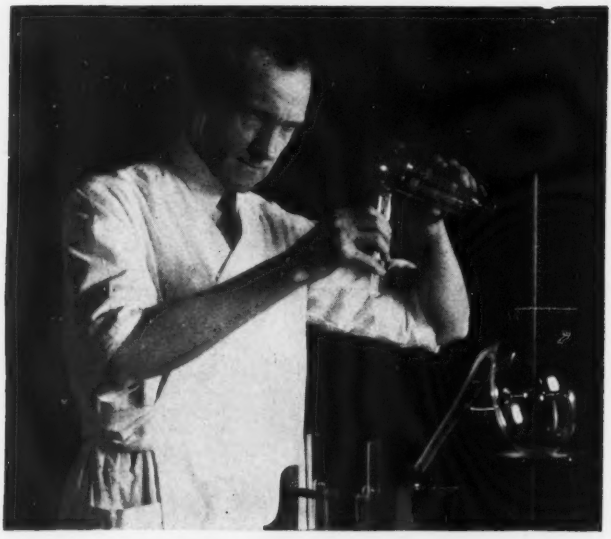
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View in the Reaction Department of our factory at Elizabeth, N. J.



If Soap is a Problem— Armour Can Help You!

No matter what kind of soap you need or for what purpose you may wish to use it, Armour and Company are in position to help you.

Over 40 years' experience in making high grade soaps for all needs—strict, efficient laboratory control of raw materials and finished products—a long-time reputation for fair dealing and satisfaction—branches in all principal cities (over 350 distributing points)—all this is behind every soap product leaving our plants.

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Scouring Soap
Scrubbing Soap (liquid)
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Shampoo Liquid
Soap Powdered (white neutral)
Soap Powders
Surgical Soaps
Textile Soaps
Toilet Soap Base
Toilet Soaps
Washing Powder

If you do not find exactly the type of soap you need in the list above, just drop a short note outlining your requirements. Armour and Company maintain a complete and practical Chemical Research Department on call at all times for rendering advice and suggestions. There is no obligation whatever for this service.

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ARMOUR AND COMPANY
1355 W. 31st STREET • CHICAGO, ILLINOIS

Lab-test



Soap

FRAGRANCE Sells SOAP

ODOR-Appeal is the all-important factor that influences sales.

Try AROMATIC **SOAP ODORS** for your LAUNDRY, HAND SOAP, TOILET SOAP, CHIP SOAP, WASHING SOAP, SHAVING CREAM, POWDERED SOAPS, ETC.

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84 Boylston Street

Aromatic specialized soap perfuming synthetic chemicals offer you a complete line of definite soap odors.

Make sure you have the right type of odor for each type of soap you manufacture.

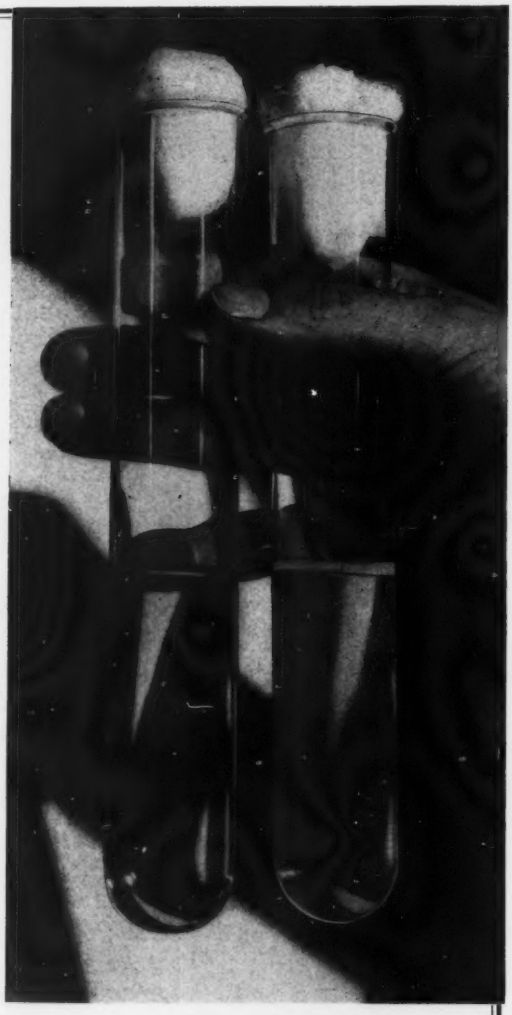
Our research chemists will gladly help to determine the most fitting odor for your special soap creation.

IMPORTATION

Aromatic direct contacts with the leading producers throughout the world offer you the finest essential oil importations.

Aromatic PRODUCTS, INC.

15 E. 30TH ST. NEW YORK CITY ··· FACTORY STAMFORD, CONN.



Every lot is laboratory tested . . . full strength . . . properly manufactured . . . certified by one of the leading bacteriological laboratories . . . and backed by a quarter century of manufacturing experience.

Baird's disinfectants are standardized chemically and bacteriologically; dilute readily with water to form rich white emulsions, without separation. Phenol co-efficients two to twenty. Let us figure with you on your disinfectant requirements, whether they be pint cans or tank cars.

Cresylic Acid Animal Dips Mosquito Larvæcide

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No Guesswork About



TRADE MARK REG.

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Pine Oil Disinfectants

Prepared from pure steam-distilled pine oil. Dilute easily to form a good white emulsion which does not separate on standing. Baird's pine oil disinfectants have a germicidal strength three to five times greater than pure carbolic acid.

Compound Solution of Cresol, U. S. P.

Also known as Liquor, Cresolis Compositus, U. S. P., and commonly referred to as Cresol Compound. Contains 50% of Cresol, U. S. P., and is manufactured in strict conformity with the specifications of the United States Pharmacopoeia. Is light amber in color and has a characteristic odor of cresol. Largely used by hospitals, physicians, surgeons and veterinarians. Carbolic coefficient about 2.5.

Stainless Cattle Spray

A light colored spraying oil containing the active principle of pyrethrum. Very effective for killing flies on cattle. Will not stain. A popular product with farmers and dairymen. No disagreeable odor.

Technical Cresol Compound

Made from refined Cresylic Acid and a saponifier. When diluted with water, clear, transparent solutions are formed. Bacteriological tests show it to be five times more effective as a germicide than pure carbolic acid. Is used as a disinfectant, deodorant and for sterilizing surgical instruments.

Pestox Liquid Insecticides

Pes-Tox is a light, amber-colored liquid prepared from high grade pyrethrum flowers. It is used in the form of a spray. The ingredients are 100% active, and when properly applied will quickly kill flies, mosquitoes, moths, fleas, hornets, wasps, centipedes, spiders, cockroaches, bed-bugs, ants, lice and vermin which may infest the home or other premises. Pleasantly scented.

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The essence of Pyrethrum flowers in concentrated form. Always uniform, stable and powerful in action. Ready to dilute with suitable oil base to produce insecticides of real merit. Supplied in various concentrations, from 4 to 1 up to 24 to 1 also grades suitable for use in vaporizing machines.

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FOR THE SOAP AND DISINFECTANT INDUSTRY



CRESOL U.S.P.

Cresol compound prepared from Barrett Cresol U.S.P. contains less than 5% Phenol, and falls well within the limitations of the Federal Caustic Poisons Act.

META PARA CRESOL

Standard grades have boiling ranges of 3°C. and 6°C. with Meta Cresol content 55% and 52% minimum, respectively. Closer boiling fractions may be supplied as required.

SPECIAL CRESOLS

Special fractions are supplied to meet user's specifications.

TAR ACID OILS, 10%-75%

Carefully blended oils ranging in tar acid content from 10% to 75%.

CRESYLIC ACIDS

Ninety-nine per cent and 95% grades of various distillation ranges, depending upon requirements.

PHENOL U.S.P.

Pure white crystalline products, 39.5°C. and 40°C. minimum melting points.

HYDROCARBON OIL

A neutral coal-tar oil for high coefficient disinfectants.

SOLVENT NAPHTHA

Approximately 25°C. boiling range.

DIP OILS

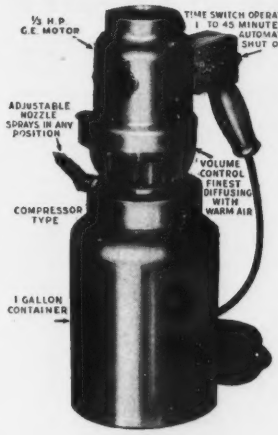
A coal tar base for animal dips and disinfectant purposes.

THE BARRETT COMPANY

40 Rector Street **New York, N. Y.**

THE TECHNICAL SERVICE BUREAU of The Barrett Company invites your consultation with its technically trained staff, without cost or obligation. Address The Technical Service Bureau, The Barrett Company, 40 Rector Street, New York.

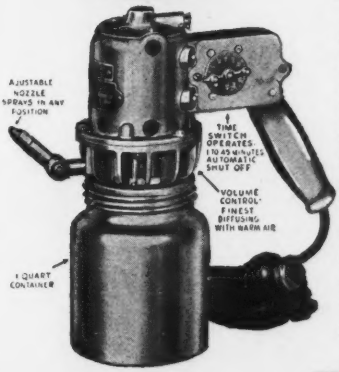
BREUER'S TORNADO ELECTRIC SPRAYERS



Do the sprayers you are using spray heavy drops—or break the insecticide up into a fine gas formation to give a dry spray like that produced only by Breuer's Tornado Electric Sprayers?

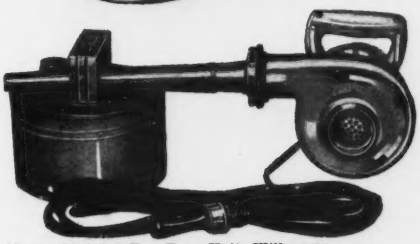
To get real results from your insecticide, use the Model 36, 53, or 54 Compressor Type Sprayers with exclusive volume control. Greater efficiency and longer life of these sprayers will make more profit for you in repeat orders and increased business. Build better business with Tornado quality!

MODEL 36—At left above—This latest model combines automatic time switch, volume air control, one gallon capacity, 1/3 H.P. G. E. Universal Motor among its features. Sprays large volume great distances in finest gas formation. Penetrates every possible source of insect existence.



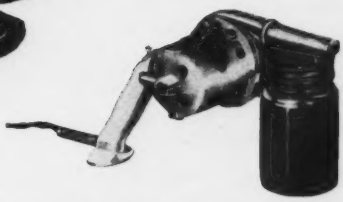
MODEL 54—At left center—This model is exactly like the Model 36 except for smaller capacity. ⅛ H.P. G. E. Motor with only one quart container. Also, like the Model 36, sprays desired amount of insecticide and then shuts off. Time switch may be set one to forty-five minutes.





Above, Model 6 Fan Type Unit. Will spray either oil or water base insecticides. Sprays 18′ to 20′. 1/3 H.P. G.E. Universal Motor. Norma Ball Bearings, 1 gallon metal container. This model is for larger institutions, warehouses, industrials, etc., and is also highly recommended for moth-proofing solutions. Write today for complete description and circulars.

MODEL 53—Above—Exactly like the Model 54 except that it has no automatic time switch. Adjustable for fine or heavy spray. Like all Tornado Sprayers, the patented principle of heating and compressing material does the trick.



At left, MODEL 50 Fan Type unit. A fine insecticide atomizer. Sprays distance of 8′ to 10′. ⅛ H.P. G.E. Universal Motor, 1 pint glass jar. 20′ of rubber covered cable. Model 51 same as Model 50 except 1 quart glass jar capacity.

Write for latest bulletins

BREUER ELECTRIC MFG. CO.

863 BLACKHAWK ST. CHICAGO, ILL.

We do not sell insecticides. Our business is manufacturing sprayers. Approved by Underwriters. Patented in U. S. A. and Foreign Countries

ALBERT H. BRUECKE

30 Rockefeller Plaza New York City

- **LURGI EQUIPMENT**

  Complete refining plants for oils.
  Deodorization plants for oils.
  High pressure autoclaves for the splitting of oils.
  Fatty acid hydrogenation plants.
  Super vacuum distillation plants for fatty acids.
  Super vacuum distillation plants for glycerine.

- **HANSA MILL EQUIPMENT**

  Continuous solvent extraction plants for oil seeds.

- **BAMAG EQUIPMENT**

  Electrolyzers for the production of hydrogen and oxygen.

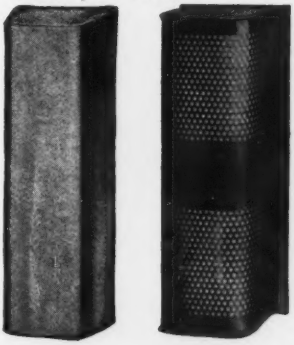
- **SOMMER SCHMIDDING EQUIPMENT FOR**

  Bodied oils.
  Printing inks.
  Ester gums.
  Gum running.
  Varnishes.

Cable Address: OILBRUECKE, New York

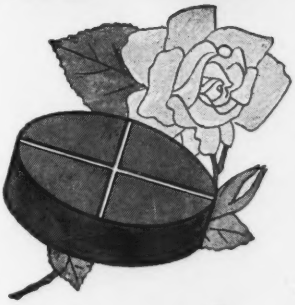
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This permits a longer life and thoro uniformity. Combined with compatible types of fragrantly pleasant, persistent perfumes, Fragrantaire Blocks will go a long way towards helping increase your sales.



Blocks — 4 oz., 24 oz. and 40 oz.

Containers—for above sizes as well as round containers to hold 4 and 6 of the 4 ounce cakes. Most styles in oxidized or white.



Odors — Rose, Pine, Lilac, Oriental.

Packing — Individually in cellophane.



Prices — The surprising part is that you do not have to pay more for these than ordinary blocks.

LIQUID SOAPS

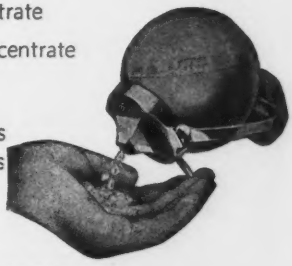
ARE NO BETTER THAN THE BASES THEY ARE MADE FROM

Clifton assures you of quality, coupled with favorable prices and combined with skill and manufacturing experience covering many years. There is more to base than mere specification. Try Clifton and find out.



Foamwell Liquid Soap
Fleur-de-Lis Liquid Soap
Semi-Castile Liquid Soap
Baby Castile Liquid Soap
40% Liquid Soap
Semi-Castile Concentrate
Olive Oil Concentrate
Coconut Oil Concentrate
Olive Oil Base

(All Liquid Soaps aged in cypress tanks)



GOOD LIQUID SOAPS

deserve proper dispensing equipment. Clifton Soapers are graceful, long lived and reasonably priced.



Also

Oil Soaps, Floor Cleanser Rub-No Wax, Metal Polish, Coal-Tar and Pine Disinfectants, etc.

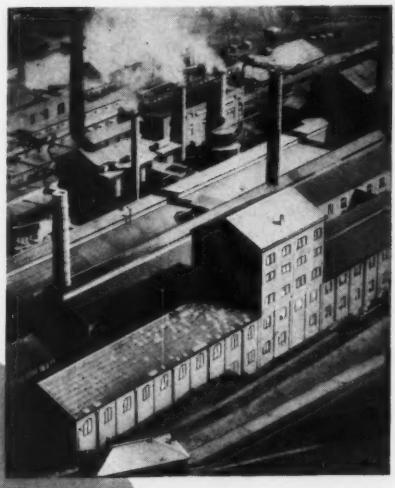


Attractive Imprint Labels and Circulars.

CLIFTON CHEMICAL COMPANY

247 FRONT STREET, NEW YORK, N. Y.

COLUMBIA takes this opportunity to remind you of its thirty-seven year record of carefully filled prescriptions for the exacting needs of the soap industry. We assure you a continuance of the uncompromising allegiance to the policy of exact control which has made COLUMBIA products the standard for quality and uniformity.



SODA ASH
CAUSTIC SODA
SODIUM BICARBONATE
MODIFIED SODAS
CALCIUM CHLORIDE
LIQUID CHLORINE

COLUMBIA

THE
COLUMBIA ALKALI
CORPORATION

EXECUTIVE SALES OFFICES 30 ROCKEFELLER PLAZA • NEW YORK, N. Y.
Branch Sales Offices • BARBERTON, OHIO • 431-451 ST. CLAIR STREET, CHICAGO
CAREW TOWER, CINCINNATI • GRANT BLDG., PITTSBURGH • Plant at Barberton, Ohio

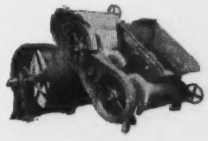
CONSOLIDATED USED MACHINERY

Every item shipped from our shops at Newark, N. J. is honestly rebuilt and guaranteed.

2—Proctor and Schwartz Soap Chip Dryers: one with late type 2 roll mill.
10—Vertical Crutchers, 3600, 3000, 1500, 1200 lbs. capacity; 1 Laboratory.
2—H.A. 3 roll Granite Mills, 12″x24″.
2—H.A. 4 roll Granite Mills, 18″x24″.
3—Day 3 roll watercooled Steel Mills.
1—H.A. Jumbo Plodder, 8″.
3—H. A. Plodders, 10″.
1—Rutchmann twin screw Plodder, 6″.
5—6-Knife Soap Chippers, 18″, 20″.
1—2 way hand Soap Cutting Table.
2—Raymond No. 0000 Pulverizers.
10—Taber Soap Pumps, 3½″ to 1½″.
20—Filter Presses, 7″x7″ to 42″x42″.
18—Horizontal Mixers, 20 gal. to 500 gal.; jacketed and unjacketed.
14—Dry Powder Mixers, 50 lb. to 10,000 lb.
12—Labelers — World, Ermold, National, Knapp, Burt makes.
25—Dopp steam jacketed Agitated Kettles, 40, 50, 60, 80, 100, 150, 200 gallons, with ribbon, bridge and double motion agitators.
1—Blanchard 10-A Soap Mill.
100—Steel and Cast Iron Jacketed and Agitated Kettles, 20 gal. to 5000 gals.
4—Ralston and Jones Automatic Soap Presses.
4—Soap Foot Presses.
3—Day Powder Fillers and Packers.
2—4′x9′ Cooling Rolls, complete with scrapers.
1—Pneumatic Scale Co. Automatic Filling, Weighing and Sealing Unit.
1—Garrigue Glycerine Evaporator, 5′ diameter.



SEND FOR LATEST SOAP BULLETIN
ASK US FOR ITEMS NOT LISTED



MISCELLANEOUS—Storage and Mixing Tanks, Paste Mixers, Pony Mixers, Liquid and Powder Fillers, Carton Sealers, Pressure and Gravity Filters, Shaving Tube Fillers and Closers, Wrapping Machines, Pulverizing Machines, Rotary Pumps, Slabbers, Boilers, Compressors, etc.

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PRODUCTS COMPANY, Inc.

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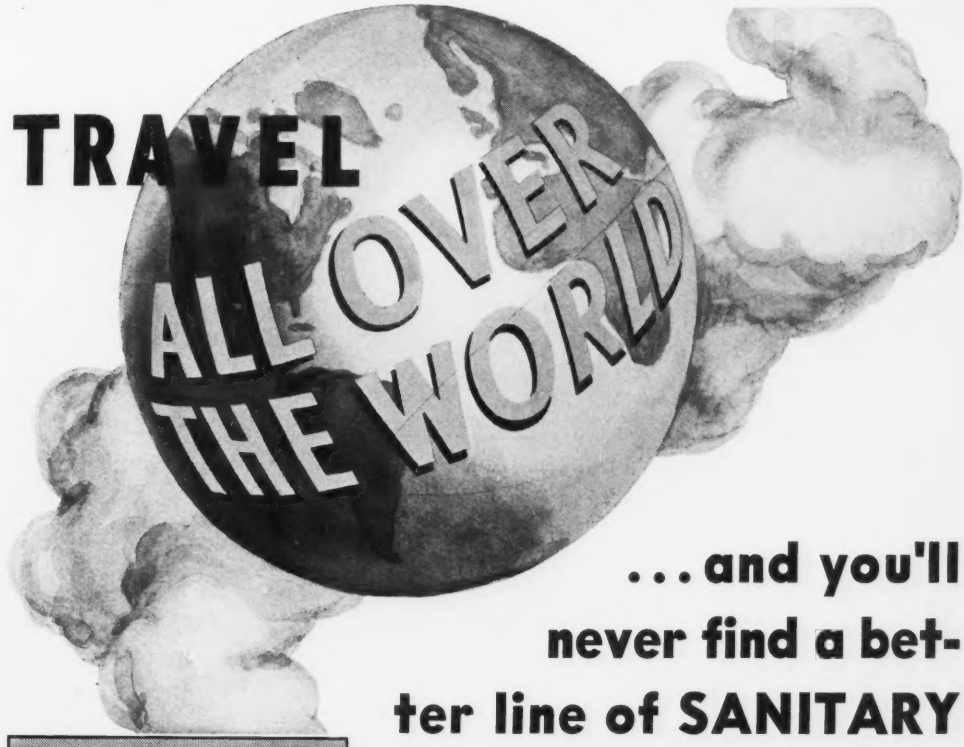
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We Buy Your Idle Equipment, Single Items or Complete Plants



CONTINENTAL CAN COMPANY

NEW YORK CHICAGO SAN FRANCISCO



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OIL SOAPS • COCONUT BASE SOAPS • LIQUID BASE SOAPS • SCRUBBING SOAPS • WAXES • POLISHES • FLOOR FINISHES • DISINFECTANTS • INSECTICIDES • DEODORANT BLOCKS

All produced under Laboratory Control . . . which assures UNIFORMITY

Sold ONLY through Jobbers

THE DAVIES-YOUNG SOAP CO.
Dayton, Ohio

Copyright, 1936, By The Davies-Young Soap Co.

DERRIS and Cube Powders—4%, 5%—Rich in Toxic substances besides Rotenone—Exceptionally fine ground air-float dust—used in making agricultural dusts, roach and flea powders, etc.

EXTRACTS, concentrated liquid, containing 5 grams of Rotenone per 100 cc. as well as the other toxic extractives. Used in agricultural and greenhouse sprays, and for impregnating agricultural dusts, flea powders, etc.

ROTENONE—Solvate 71%, technical 90%, and chemically pure. Fine dry white crystals used in making mothproofing sprays, fly sprays, technical work, and for colorless products, etc.

RESINATE—Derris. Two forms—25% Rotenone and 15% Rotenone. Light brown powder. Used in compounding agricultural and horticultural sprays, mill sprays, etc., under private formulae.

INSECTICIDAL bases—Double X, a Rotenone-Pyrethrum combination and Optone, a solution of rotenone in oil, are used for dilution to give efficient stock sprays, fly sprays, and other household sprays.

SPRAY—Super-agricultural—A complete finished liquid plant spray—95% active. Furnished to manufacturers in bulk for repackage under their own trade name. A tested and proven product.

INCREASED efficiency follows use of our products.

DERRIS INC.

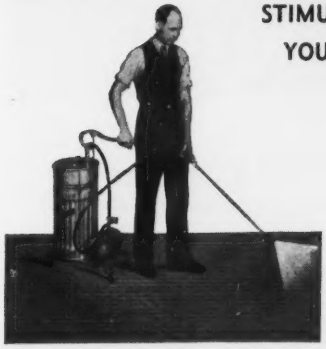
79 WALL ST., NEW YORK

DOBBINS SPRAYERS–DUSTERS

SUPERBILT FOR SERVICE — DESIGNED FOR GREATER UTILITY

STIMULATE THE DEMAND FOR
YOUR GOOD PRODUCTS WITH

DOBBINS
SPRAYERS
AND
DUSTERS



NO. 170 SPRAYER
Spraying scrubbing soap or floor cleaning compounds to large floor surfaces.

Write for circular on soap sprayers that take the rub out of scrubbing.



NO. S122G SPRAYER
A convenient soap sprayer for janitor service. Hose, valves and all gaskets are made from materials that will withstand caustic action of soap and cleaners.

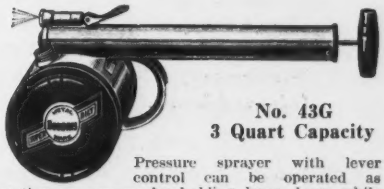


No. 35G
3 Quart
Capacity

HIGH PRESSURE CHEMICAL SPRAYER WITH CONTROLLED ATOMIZATION

The discharge has a wide range of adjustments, from a forceful, penetrating spray, to fine floating fog, with in-between variations.

WE
MAKE
A
COMPLETE
LINE



No. 43G
3 Quart Capacity

Pressure sprayer with lever control can be operated as continuous sprayer by holding lever down while pumping. Very convenient and efficient.



A Complete Line of Atomizers



NO. 133 NEW TYPE DUSTER
UNIFORM DISCHARGE
UNEQUALED PERFORMANCE



No. 10
Floor Oil Sprayer
With Air Regulator
and
Volume Control
1½ Gal. Capacity

There is a Dobbins' Superbilt Sprayer or Duster that will make your Good Products more effective.

WRITE FOR CATALOG AND PRICE LIST
CONSULT US ABOUT YOUR SPRAY PROBLEMS

DOBBINS MANUFACTURING CO.
NORTH ST. PAUL, MINNESOTA

PARADOW

(PURE PARADICHLORBENZENE)

Paradow is virtually a standard product in the industry because of its uniform quality, wide choice of size and its free flowing characteristics. Six standard, graded sizes, with special sizes also available on order, make it possible to adapt Paradow to your particular manufacturing requirements. Samples and price sent promptly upon request.

DOW PRODUCTS FOR THE SOAP INDUSTRY

DOW Aromatic Chemicals . . .

Coumarin (odor of Sweet Clover)—Phenyl Ethyl Alcohol (odor of Rose)—Methyl Salicylate (odor and flavor of Wintergreen) — Methyl Anthranilate (odor and flavor of Grape).

DOW Solvents . . .

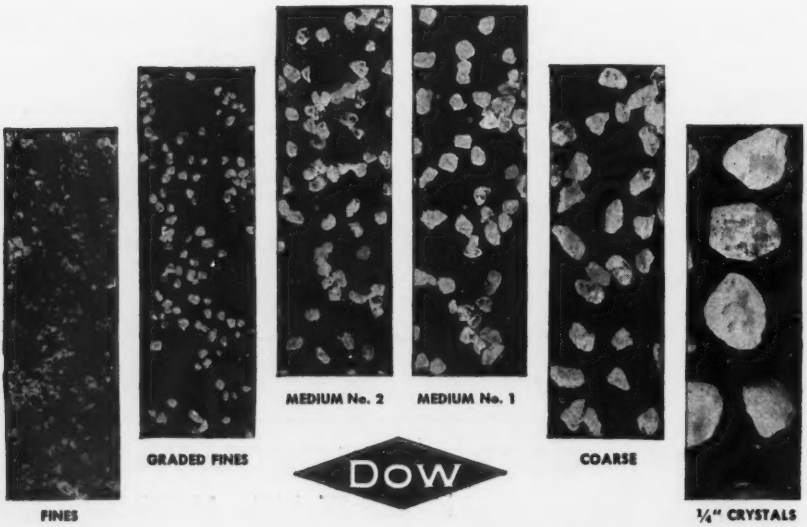
Carbon Tetrachloride—Ethylene Dichloride—Propylene Dichloride—Orthodichlorbenzene.

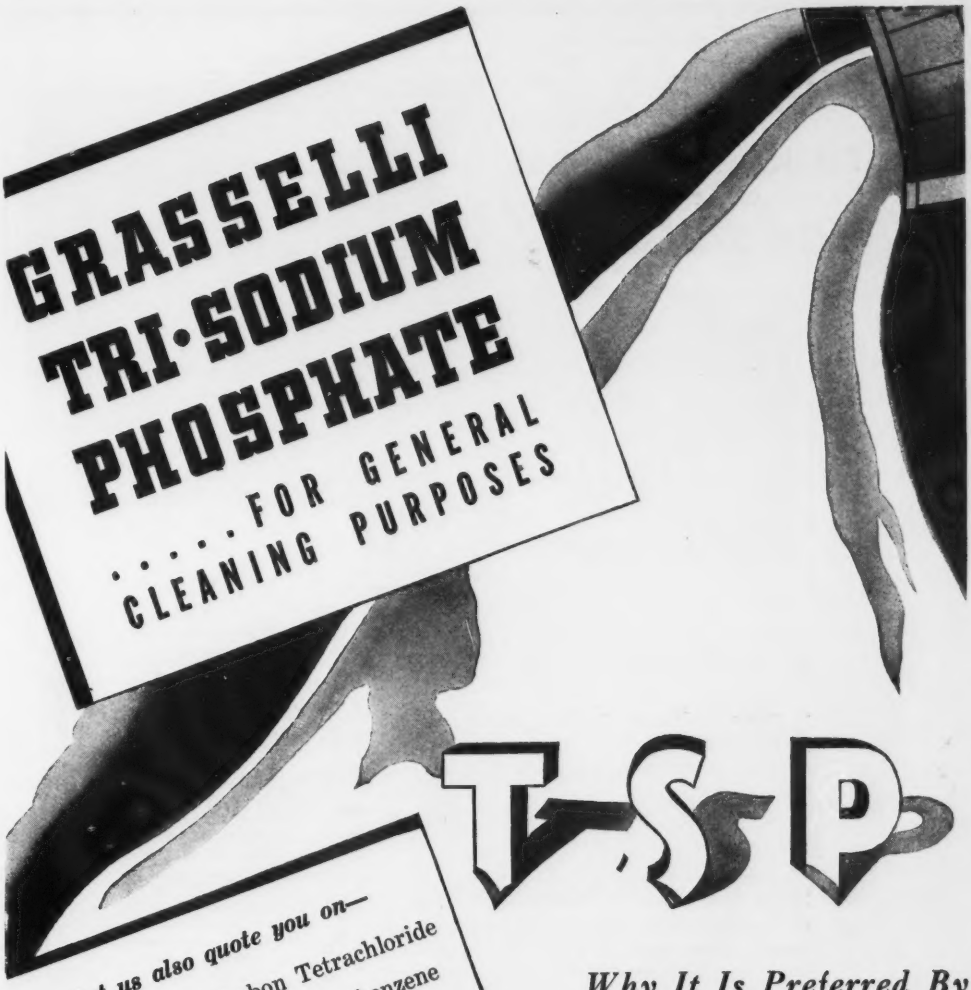
Other DOW Products . . .

Caustic Soda—Dowicides (Disinfectants).

THE DOW CHEMICAL COMPANY, Midland, Michigan

Branch Sales Offices: **30 Rockefeller Plaza, New York City • Second and Madison Streets, St. Louis 135 South LaSalle Street, Chicago**





Let us also quote you on—

Silicate of Soda
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Carbon Tetrachloride
Paradichlorobenzene
Sodium Fluoride
and other chemicals you may need

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GRASSELLI GRADE is the popular brand generally specified on most orders for T.S.P. because (1) it is Free Flowing; (2) it comes in non-sifting packages that prevent loss in transit or storage; (3) it is furnished in five grades (fines, medium, coarse, flake and globular); (4) prompt delivery is assured from our nearest branch. Let us figure on your T.S.P. requirements.

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To help You Create Business *and Hold It!*



MORE and more jobbers are convinced that the Falcon line provides a powerful lever for boosting business. For they are selling more and making more. Their tie-in with Falcon helps them not only to capture the business, but to hold it.

The reason is plain. The jobber who supplies his customers with Falcon products, knows that what he recommends is backed not by extravagant claims, but by *proven* performance—performance that makes certain the customer will be satisfied. Whether it be a roach powder, soap, deodorant, or any other sanitation need, he can offer a dependable Falcon product that does the job better . . . *at no extra cost.*

If you are interested in creating a steady, profitable, repeat business, it will pay you well to investigate Falcon Sanitation Products. Write for the complete story—today.

EAGLE SOAP CORPORATION
HUNTINGTON INDIANA

DEODORANTS
Falcon Blocs
Falcon Blockettes
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LIQUID TOILET SOAPS
Falcon 40% Concentrated
Falcon 18% Toilet Grade
Falcon 18% Mechanics Grade
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FLOOR CLEANSERS
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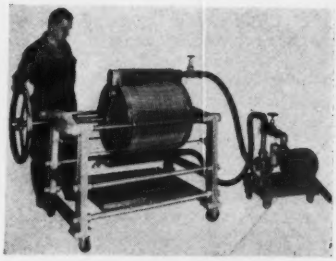
FALCON SANITATION PRODUCTS

ERTEL ENGINEERING CORP.

LIQUID HANDLING EQUIPMENT

120 EAST 16th STREET
CABLE ADDRESS "ERTELENCOR"

NEW YORK, N. Y.
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PRODUCTS

Asbestos Disk Filters, Asbestos Filter Sheets, Pre-Filters, Three-Way Multiple Filters, Stainless Steel and Glass-Lined Tanks (open or closed), Portable and Semi-Automatic Vacuum Bottle Fillers (with or without conveyor), Portable Electrical Mixers, Portable Pumps, Cappers.

USES

Filters: Clarifying, polishing and germproofing any type of liquid.

Tanks: For Storing or mixing liquids.

Bottle Fillers: 3, 6, 8 or 12 spout fillers for the rapid filling of liquids.

Portable Mixers: For Mixing heavy and light liquids.

Portable Pumps: For transferring liquids from tank to tank.

Cappers: Hand operated. Will handle cap up to 42 mm.

The Ertel Three-Way Multiple Filter

Combines the functions of 3 machines in one single unit.
1. Can be used as a pre-filter.
2. Disk filter can be used as polishing filter alone.
3. Complete, this equipment makes a combination pre-filtering and disk filtering unit.

Reduces filtration costs 30 to 70%.

Liquids which could not otherwise be filtered through disk filters are efficiently handled by virtue of pre-filtering combination.

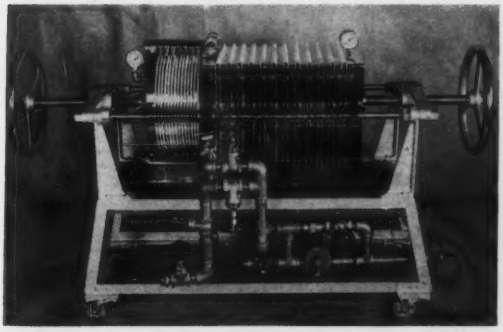
It is an all purpose filter . . . unique construction makes possible handling any type of liquid.

Available in many sizes for various capacities.

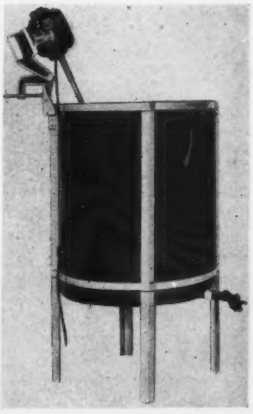
Unusual pump construction makes it adaptable as transfer pump when not filtering.

Standard models of high grade bronze, nickel plated—all valves and parts easily accessible.

Mounted on castors, it can be transported from one part of the plant to another without difficulty.



REPRESENTATIVES IN BOSTON, CHICAGO, ST. LOUIS, LOUISVILLE, BALTIMORE, LOS ANGELES, SAN FRANCISCO, PITTSBURGH, SEATTLE, SAN JUAN, P. R., LONDON, ENGLAND.

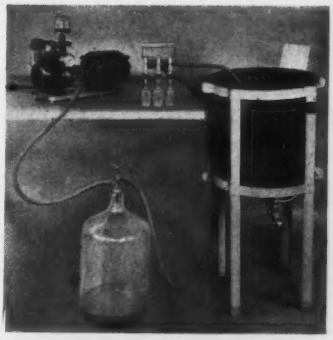


TANKS

Ertel Glass Lined Tanks, built in sizes from 15 to 350 gallons, and Ertel Stainless Steel Tanks, built from 15 to 1,000 gallons, are acid resistant.

MIXERS

The Ertel Portable Mixers are furnished in all sizes and for any purpose. Scientifically designed, accurately balanced, they are light, easy to handle and are always ready for instant service. The handy grip, an exclusive feature of the Ertel mixer, makes it truly portable.



FEDERAL

Sealers Finishes and Waxes

for Every Type of Surface

Federal Floor Preservatives and Polishes are highly perfected products. They are the result of constant research, both in the laboratory and in practical usage. Our entire technical staff has concentrated on the development of these finishes. They are specialized products made by America's largest manufacturer of Preservatives and Polishes selling in bulk.

In this list will be found the entire Federal Line with a quality product for every purpose and every surface.

NO-BURN GYM FINISH
An extremely hard, durable finish that will not rubber-burn on gymnasium floors and also one with such remarkable durability it can be used on all types of interior or exterior surfaces including dance floors, school furniture, desks, seats, etc. Applied with a lamb's-wool mop, applicator or cheesecloth pad.

G. F. B. No. 2
This is No-Burn Gym Finish except made in a standard body for brush application.

G. F. B. No. 3
Is the same remarkably durable finish as No-Burn Gym Finish but intended for use only on surfaces where a hand rubbed finish is desired.

G. F. B. CONCENTRATED BASE COLORS
Highly perfected concentrated color bases for use with No-Burn Gym Finish to impart colors as well as extreme durability on wood, concrete and cement surfaces. Made in Light Oak, Dark Oak, Light Gray, Dark Gray, Walnut, Maroon, Green.

G. F. B. CONCENT'D ALUMINUM BASE COLOR
A perfected concentrated aluminum base for all types of metal work such as tanks, bridges, pipes, etc., on both inside and outside surfaces.

MOP-VAR
A Penetrating Sealer to be applied with a mop or other applicator. Reduces maintenance and application costs. For wood, concrete, hard mastic or magnesite, cork and cork tile.

LIGHTNING LUSTRE
A no-rub, no-polish wax for rubber tile, soft composition, linoleum, and as a maintenance finish for practically any surface.

VAR-LIN
A preservative and polish combining the hardest waxes of best quality, varnish gums and quick drying solvents. Very durable and practically eliminates the slipping hazard. Polishes to a beautiful, glossy film.

LIQUID OIL BASE WAX
A wax of the oil base type. Applied with a mop or applicator. Buffs and polishes beautifully. A superior product of its type.

TERRAZZO SEALER
The perfect sealer for terrazzo and marble floors. Reduces cost of maintenance. Prevents penetration of dirt.

CHAIN STORE SEALER
This is a highly specialized penetrating sealer for wood floors to meet peculiar conditions and requirements of large organizations operating chain units. Applied by spraying or large lamb's-wool applicator. Forms a hard, durable finish that will not stain merchandise accidentally dropped on it.

RUBBER LACQUER
A superior lacquer developed particularly for use on rubber and rubber tile. Dries rapidly, easily applied and very durable. Will not discolor light shades.

LINOLEUM LACQUER
Specially made for printed, lacquer finished inlaid linoleum and congoleum or Sealex types of linoleum. Dries in 30 minutes, easy to apply and will not cause light, delicate shades to fade or discolor.

GYM FINISH CLEANER AND POLISH
Specially developed for the cleaning of gymnasium floors, hand ball and basket ball courts, etc. Cleans perfectly rubber shoe marks and other soiling elements.

BUFFING WATER WAX
A water wax type of finish developed by our chemists but unlike the self-polishing water waxes requires buffing to bring out the beauty of finish. Very popular wherever this type of wax is used.

LINOLEUM, RUBBER & TERRAZZO CLEANER
Meets perfectly all requirements for a superior cleaner for these surfaces. Keeps the surface always in proper condition and prevents deterioration.

GYM FINISH MARKING ENAMELS
Another Federal specialized product made for the purpose of marking hand ball courts, basket ball floors, running lanes, etc. Has the remarkable wearing quality of Gym Finish and possesses great covering and hiding power. Made in White, Red, Black.

STREET MARKING OR TRAFFIC PAINT
A rapid drying paint for marking traffic lanes, parking spaces and similar uses. For both inside and outside use. Dries for traffic use in 30 minutes. Has remarkable wearing quality necessary for a product of this kind.

PASTE WOOD FILLERS AND VARNISH REMOVERS

Our laboratories are constantly developing new products and perfecting new methods and treatments for beautifying and preserving all floor surfaces.

Write for complete information, testing samples and prices.

FEDERAL VARNISH COMPANY

337 SO. PEORIA STREET **CHICAGO, ILL.**

FELTON AROMATICS

FOR SOAP, DISINFECTANT, AND INSECTICIDE MANUFACTURERS

• Aromatic Chemicals •

Manufactured at our Brooklyn factory under accurate chemical control, these aromatic chemicals are of the highest degree of purity, and are always of uniform quality. The following are of special interest to soap makers:

AMYL CINNAMIC ALDEHYDE
AMYL BENZOATE
BENZYLIDENE ACETONE
CITRAL
DIPHENYL OXIDE
EUGENOL
GERANIOLS
GERANYL ACETATE
ISO BUTYL BENZOATE
ISO EUGENOL
LINALOOL
LINALYL ACETATE
METHYL PARA CRESOL
PARA CRESOL ACETATE
RHODINOL
TERPENYL ACETATE

• Perfumes for Soaps •

A complete range of floral notes, bouquets and oriental odors. **Will not discolor.** Special odors can be readily supplied. The facilities of our laboratories are available to assist you in your perfume problems.

• Water Soluble Perfumes •

AQUAROMES—Completely soluble in water to a clear solution. A wide variety of odors for **(Trade Marked)** liquid soaps, soap base shampoos, theatre sprays, formaldehyde solutions, etc.

• Insecticide Spray Perfumes •

We manufacture a suitable variety of odors for insecticide sprays. All of these odors are pleasant in character, powerful as to coverage and economical, costing on the average, less than three cents to perfume a gallon of spray.

• Perfumes for Deodorant Blocks and Crystals •

COLOROMES—Will perfume and color naphthalene and para dichlor benzene in one simple **(Trade Marked)** operation. A wide variety of odors and colors are available. Perfume also supplied without color. With the use of Felton Coloromes, the odor remains until the last particle of naphthalene or para has evaporated.

SAMPLES AND QUOTATIONS ON REQUEST.

FELTON Quality

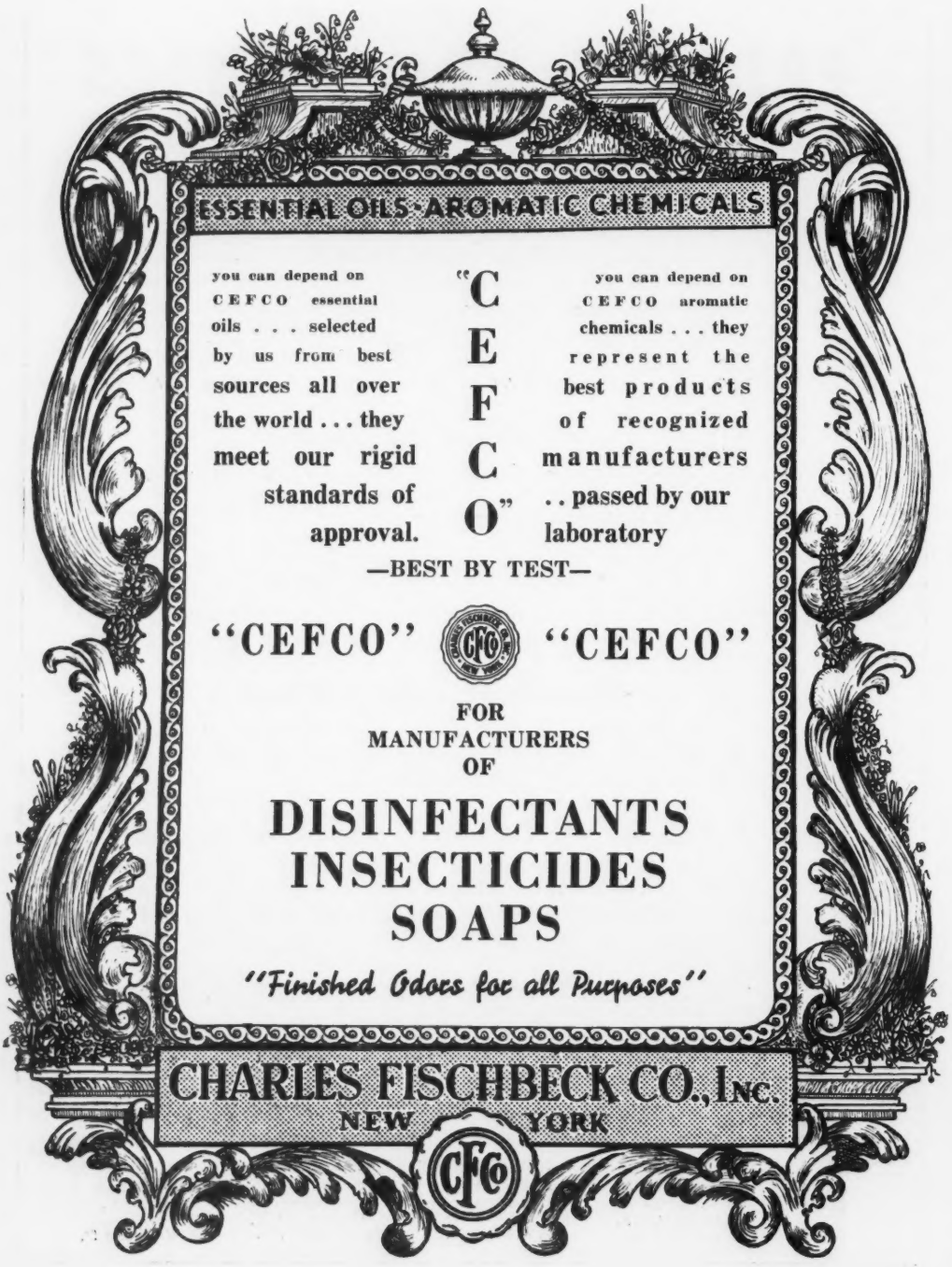
FELTON CHEMICAL COMPANY, INC.

603 JOHNSON AVENUE, BROOKLYN, N. Y.

Aromatic Chemicals — Natural Isolates — Perfume Oils — Artificial Flower & Flavor Oils

STOCKS CARRIED IN PRINCIPAL CITIES

CHICAGO, ILL. 1200 N. Ashland Ave.
NEW ORLEANS, LA. Balter Bldg.
ST. LOUIS, MO. 245 Union Blvd.
BOSTON, MASS. 80 Boylston St.
PHILADELPHIA, PA. 200 South 12th St.
SANDUSKY, OHIO 1408 W. Market St.
LOS ANGELES, CALIF. 515 South Fairfax Ave.
SAN FRANCISCO 214 Washington St.


ESSENTIAL OILS · AROMATIC CHEMICALS
you can depend on CEFCO essential oils . . . selected by us from best sources all over the world . . . they meet our rigid standards of approval.
"CEFCO"
you can depend on CEFCO aromatic chemicals . . . they represent the best products of recognized manufacturers . . passed by our laboratory
—BEST BY TEST—
"CEFCO"
"CEFCO"
FOR MANUFACTURERS OF
DISINFECTANTS
INSECTICIDES
SOAPS
"Finished Odors for all Purposes"
CHARLES FISCHBECK CO., INC.
NEW YORK
CFCo



Permanent Gloss Waterproof — is the no rubbing wax that marked the popular return to this type floor finish.



Vitozone Deodorant Blocks deliver MORE perfuming value per block due to perfectly adapted aromatics, —scientifically compounded.



Stop Watch Polish for polishing hot or cold metal the quick way and for protecting outdoor trims from reoxidizing.

Fuld Makes

Deodorants Disinfectants

Floor Waxes and Treatments

Polishes Insecticides

Cleaning Compounds Deodorant Blocks Plumbing Specialties

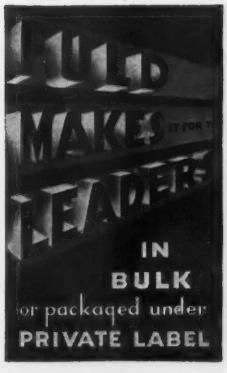
Oil and Soft Soaps Liquid and Base Soaps

For the Leaders

FULD BROS., INC., BALTIMORE, MD.



An internal and contact poison combination that kills roaches and similar insects with guaranteed 95% active ingredients.





Two types of Drain Pipe Cleaner (Hot or Cold Water) which can always be depended upon to open stopped drains.

In Daily Service from Coast to Coast

sold by leading jobbers and distributors the

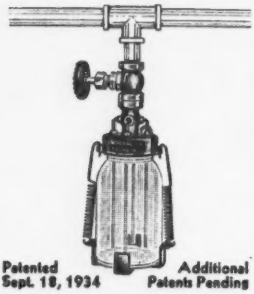
"FUMERAL" INSTANT DIFFUSER

Does a Thorough Job.... INEXPENSIVE—EFFICIENT—ECONOMICAL

Instantly Destroys Insects, Deodorizes and Fumigates

Modern sanitation, insect, vermin and rodent control for dairies, ice cream and cheese factories, bakeries, confectionaries, flour, cereal and food mills, packing plants, sausage factories, refrigerators, office buildings, store rooms, ocean liners, paper mills and thousands of various industries, can now be accomplished.

FUMERAL PRESSURE SYSTEM CONNECTS TO STEAM OR AIR PRESSURE LINE



Patented Sept. 18, 1934 — Additional Patents Pending

THOROUGH DIFFUSION AND POWERFUL CIRCULATION

The effectiveness of any good spray solution depends upon the efficiency of your spray equipment. Wet sprays are not efficient. It takes a minimum of 30 lbs. (steam or air pressure) to diffuse spray solutions. THE FUMERAL INSTANT DIFFUSER instantly charges the entire room. No insects, flies, cockroaches, ants, moths or germs have a chance to escape. Connects to any steam or air line. Turn on the valve and in 4 minutes the operation is completed. No electricity to fuss with. No moving parts. Nothing to get out of order. FUMERALS stay sold. Simple—Inexpensive—More Efficient and Most Economical. Anyone can install it. Various brands of insecticides, germicides, bactericides, deodorants, disinfectants and fumigants all work better in the FUMERAL INSTANT DIFFUSER.

LASTS A LIFE TIME

LIST PRICE

In single lots	$7.50
In lots of 3 to 12, each	6.75
In lots of 12 or more, each	6.00

F. O. B. Racine, Wis.

Prices subject to change without notice.

SHIPPING WEIGHTS

1 Fumeral —(parcel)	5 lbs.
2 Fumerals—(parcel)	9 lbs.
3 Fumerals—(parcel)	14 lbs.
4 Fumerals—(parcel)	18 lbs.
6 Fumerals—(half case)	28 lbs.
12 Fumerals—(full case)	52 lbs.

INSTALLATION

Install the FUMERAL near the center of the room conveniently located approximately 8 to 10 feet from the floor. The finely diffused spray will penetrate the entire room and reach the highest ceilings. Figure one FUMERAL for each 10,000 cubic feet of space. For example, a room 30 x 30 ft. with a 12 ft. ceiling measures 10,800 cubic feet. Use a minimum of 30 lbs. of steam or air pressure. Higher pressures up to 200 lbs. may be safely used. A special heavy duty FUMERAL control valve is furnished with each individual unit.

PORTABLE UNITS

For exterminating service and various sanitation purposes in places where no steam or air pressure is available, we furnish PORTABLE FUMERAL INSTANT DIFFUSERS operated by compact automatic air compressor units. FUMERAL portable diffusers also can be operated direct from the air line by using convenient sections of air hose from 50 up to 300 feet. Prices will be quoted upon request.

FUMERAL COMPANY

RACINE, WIS.

Manufacturers of Fumeral Stationary and Portable Instant Diffusers

SODIUM FLUORIDE

(NILE BLUE)

The standardization of Sodium Fluoride Colored Official Nile Blue has effectively done away with hazard to the public. No one will mistake the blue tinted powder for a food ingredient . . . Its potency as an exterminating agent maintains it as the dominant insecticide for the commercial and household destruction of insect pests . . . This General Chemical Company product excels in free-flowing quality and fluffiness.

TRISODIUM PHOSPHATE

The Standard Purity of this, as of all other General Chemical Company products, is a matter of common knowledge. The practical advantage of the Company's standard of packaging assures the customer's receipt of his material in its original condition.



The Company's Products include also:

SODIUM SILICATE
ACETIC ACID

and other Heavy Chemicals of Standard Purity

GENERAL CHEMICAL COMPANY

40 RECTOR STREET, NEW YORK, N. Y. **Cable Address: LYCURGUS, N. Y.**

Sales Offices: Buffalo, Chicago, Cleveland, Denver, Los Angeles, Philadelphia, Pittsburgh, Providence, San Francisco, St. Louis

THIS Getz Em!

Not the Cheapest . . .

But the Best!

A HANDY BLOWER that can be used in all positions—saving powder and getting into the spots where the powder kills all roaches and insects. An indispensable tool for professional exterminators. A profitable jobbing sideline for sanitary supply houses.

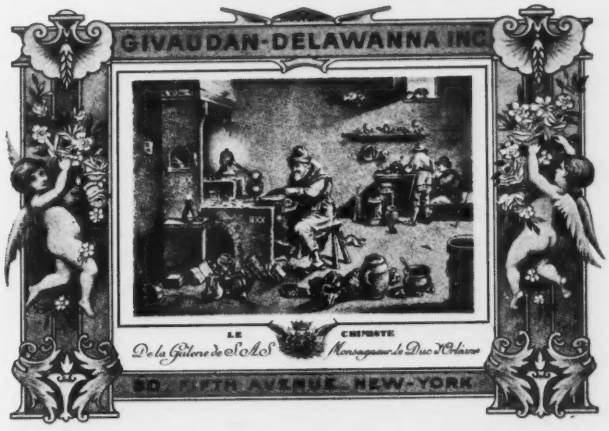


GETZ EXTERMINATORS INC.

1139 PINE STREET **ST. LOUIS, MO.**

HEADQUARTERS

FOR SPRAY AND DISINFECTANT REODORANTS



We have developed and offer you a number of excellent perfuming and reodorizing oils for fly sprays, paradichlorobenzene and naphthalene blocks, cleaning compounds and polishes. These cover all price requirements.

The following are a few which have met with marked success:

CITRENE—Use CITRENE instead of Citronella in your soap, cleaners, and polishes. Stronger, pleasanter, cheaper.

FLORENE—Sharp, clean, refreshing scent that covers kerosene odor. Excellent for fly sprays and insecticides.

KÉRODOR No. 1—A very inexpensive deodorant, for neutralizing the kerosene odor in insecticides. Kerodor is EFFECTIVE . . . it gives sprays the advantage of a pleasant odor.

ODRENE—Powerful, low price oil for use alone or in combination in sprays, in polishes.

KEROZONE—a new and novel idea in fly spray odors—an odor that suggests a fresh, wholesome out-of-doors atmosphere.

LILAC SPRAY OIL B-3223-2—Especially blended to overcome the unpleasant odor of kerosene insect sprays.

NEW MOWN HAY OIL B-3470—This type of odor is one of the most popular in sprays. B-3470 is especially effective in overcoming the kerosene smell.

PARATINTS—Paratints color and perfume paradichlorobenzene blocks, bath salts, or moth balls in one operation. And they do it better . . . because of uniform penetration of the crystals . . . more effective perfuming oils.

See inside of the front cover for information on Givaudan soap perfumes and other products.

BRANCHES
Philadelphia, Los Angeles, Cincinnati Detroit, Dallas. Baltimore

GIVAUDAN DELAWANNA INC.

80 Fifth Avenue, New York, N. Y.

BRANCHES
New Orleans, Chicago, San Francisco, Seattle, Montreal, Havana.

"GOOD" PRODUCTS— at "GOOD" PRICES

Sixty-nine years of experience in the manufacturing chemical field insure our ability to supply products of consistent high quality and definitely standardized as to purity and strength. All "GOOD" products are priced at levels which enable the jobber to compete on volume business. Ask for a copy of our current price list.

Disinfectants

Coal Tar Disinfectants
Chlorine Disinfectant
Drip Machine Fluid
Liquor Cresolis Comp. U.S.P.
Liquor Cresolis Comp. Tech.
Pine Oil Disinfectants
Saponified Cresol Solution, B.A.I.
ZAXOL—Prevents oil dermatitis

Soaps

Auto Soap, Paste
Coconut Oil Soap Base
Dog Soap—cake and liquid
Fish Oil Soaps
Liquid Hand Soaps
Pine Cleaner Soaps
Saddle Soap
"SCOTCH" Soap—concentrated
Scouring Soaps—cakes
Surgical Soft Soap, U.S.P.
Vegetable Oil Soaps
Whale Oil Soaps

Cleaners

Crystal Cleaner
Rug Cleaner
Wax Base Cleaner

Insecticides

Agricultural Sprays & Chemicals
Bed Bug Killer
Concentrated "Insectifuge"
Fly Sprays—Odorless & Perfumed
Roach Powders
Theatre Sprays—perfumed

Waxes and Polishes

Self Polishing Liquid Wax
GLOSSTER Liquid Buffing Wax
GLOSSTER Paste Floor Wax
Cedar Oil Polish
Cream Furniture Polish
Lemon Oil Polish
Non-Inflammable Liquid Metal Polish

Chemicals

Carbon Tetrachloride
Drain Pipe Solvent
Trisodium Phosphate
Fire Extinguisher Liquid (Carbon Tetrachloride Base)
Soda & Acid Recharges (for 2½ or 3 gal. fire extinguishers)

JAMES GOOD, INC.

KENSINGTON PHILADELPHIA



HOOKER PRODUCTS

CAUSTIC SODA LIQUID CHLORINE
BLEACHING POWDER MURIATIC ACID
MONOCHLORBENZENE ORTHO-DICHLOR-
BENZENE PARA-DICHLORBENZENE
TRICHLORBENZENE TETRACHLORBENZENE
HEXACHLORBENZENE SODIUM BENZOATE
AMMONIUM BENZOATE BENZOIC ACID
BENZOIC ANHYDRIDE BENZOYL CHLORIDE
PARA-NITROBENZOYL CHLORIDE
BENZYL CHLORIDE BENZYL ALCOHOL
BENZOTRICHLORIDE CHLORTOLUENE
ALUMINUM CHLORIDE ANHYDROUS
ANTIMONY TRICHLORIDE ANHYDROUS
ARSENIC TRICHLORIDE ANHYDROUS
TIN TETRACHLORIDE ANHYDROUS
FERRIC CHLORIDE SOLUTION
FERROUS CHLORIDE SOLUTION
SULFUR MONOCHLORIDE
SULFUR DICHLORIDE
SULFURYL CHLORIDE
THIONYL CHLORIDE
ACETYL CHLORIDE
PROPIONYL CHLORIDE
ALPHA-CHLOR-
NAPHTHALENE
SPECIAL SALT
HYDROGEN

"PARADI"

REG. TRADE MARK

HOOKER PARADICHLOR-BENZENE IS SPECIALLY PREPARED FOR USE IN THE MANUFACTURE OF MOTH PREVENTIVES AND DEODORANTS AND IS OFFERED IN SIX STANDARD CRYSTAL SIZES.

READY FOR IMMEDIATE SHIPMENT IN 200 AND 100 POUND BARRELS AND 50 AND 25 POUND KEGS.

CAUSTIC SODA . . .

IMMEDIATE DELIVERY OF SOLID AND FLAKE CAUSTIC SODA IN STEEL DRUMS, LIQUID IN DRUMS OR TANK CARS. GROUND AND POWDERED IN STEEL DRUMS OR HEAVY WOODEN BARRELS.

HOOKER SERVICE MEN, CHEMISTS AND ENGINEERS GLADLY ASSIST CONSUMERS FREELY ON EQUIPMENT DESIGN AND USE OF THIS PRODUCT.

OPPORTUNITIES TO QUOTE WELCOMED

HOOKER ELECTROCHEMICAL COMPANY

EASTERN
PLANT—NIAGARA FALLS, N. Y.
SALES OFFICE: 60 E. 42ND ST., NEW YORK

WESTERN
PLANT—TACOMA, WASH.
SALES OFFICE: TACOMA, WASH.

147

Houchin Machinery Co.

Hawthorne, N. J.

Soap Machinery



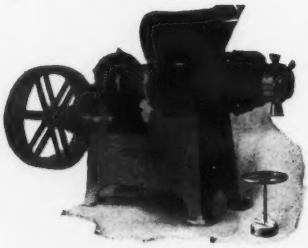
Combination Plodder

With this machine toilet soap can be produced without the use of mills. Our "F" Size machine is ideal for making Sample Cakes.

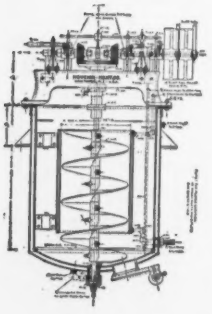
Standard Jumbo Plodder

This machine is used in most soap factories.

It is used also in our mill-less method.



Perfection



Crutchers

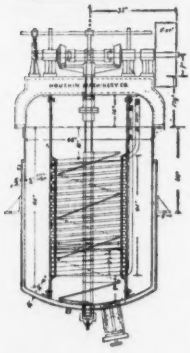
Our Perfection machine is standard with the majority of soap makers.

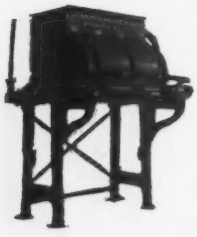
It is the best machine for making cold made — half boiled and floating soaps. Made in several sizes.

Our special machine is ideal for making shaving soaps.

Kettle made of nickel clad steel, coil and blades of monel metal. Also has our plug type valve. Made in several sizes.

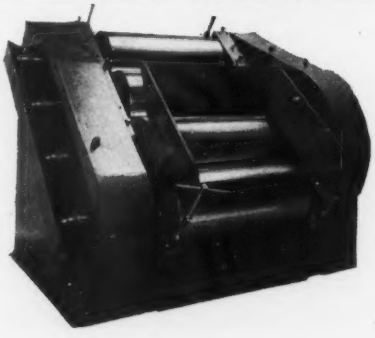
Special Crutcher





Ideal Amalgamator

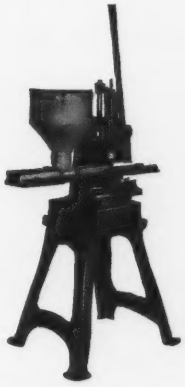
This machine has lately been improved with a new locking device operated by chains on each end. It has been so designed that the soap can be emptied into hopper of mill or plodder. Lately we have made several machines using nickel clad steel for the kettle, monel metal for the blades.



This cut represents our latest Type F Mill. Rolls are 18" dia. 40" long, water cooled. Frames are very heavy, bearings very large. Gears run in oil. Gears and bearings are entirely covered, all mounted on a heavy cast iron base.

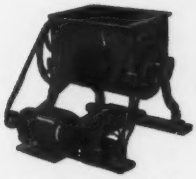
HUBER SOAP MACHINERY

"Built To Last"



Hand operated Para Press. Very powerful. Working parts all steel. Female labor permitted. Send for particulars of our electric power press. Twenty-five blocks per minute.

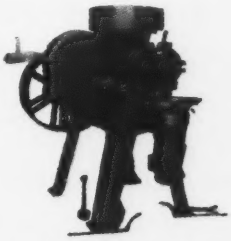
Makers of Good Soap Machines for over 40 years



Mixers for dry materials. Mixers for wet materials. Hand operated or by motor. Dumping type mixers. End outlet mixers.



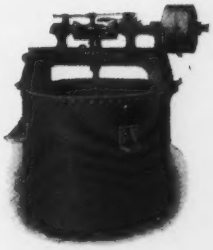
Liquid soap Blenders—six sizes. Cold-made soap makers—six sizes. Stainless steel cold cream producers. Shaving cream mixers, stainless steel. Motor or pulley operated. Paddle or worm agitation.



Rutchman Plodders. Twin screws, large capacity. 3"—6"—8" diam. Motor operated. Rutchman Mills. In use for over 60 years. Sole manufacturer. None better.

We Also Feature

Crayon Molding Machines
Wax Molding Machines
Candle Molding Machines
Votive Light Molding Machines
Crayon Labellers, motorized, of great capacity
Soft chalk molding machines
Extruded Chalk machines
Suppository split molds
Soap presses, foot operated
Soap cutting devices
Completely designed soap plants



Perfection Soap Crutchers. 150—1500—2400—3600 lbs. cap. Electro-Perfection Crutcher, two speeds and reverse. 1500—2400—3600 lbs. capacity. Used by all large soap producers throughout the world.

HUBER MACHINE COMPANY

265—46th Street **Brooklyn, N. Y.**

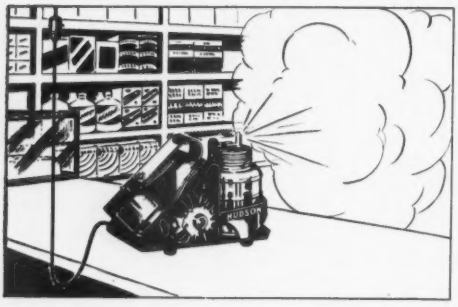
HUDSON SPRAYERS

FOR THIS WAR ON BUGS—

You Make the Ammunition—We Make the Guns!

The best bullets in the world are harmless unless a good gun gives them perfect aim. And the world's best insecticide won't kill bugs unless it's properly applied. That's the job of Hudson sprayers—to turn your insecticide into a perfectly atomized spray that carries, penetrates, spells death to insects wherever it's used. Be sure that your customers use your product right—supply a Hudson sprayer with it.

FOR STORES, WAREHOUSES, ETC.



THE HUDSON No. 300 ELECTRIC SPRAYER

WORKS AFTER HOURS

At closing time, storekeepers, etc., can set the time switch for any period from 1 to 30 minutes necessary for treating the room; the spray shuts off automatically when the job's done. This handy little electric sprayer, with built-in compressor and specially designed spray head, handles any liquid insecticide, disinfectant or exterminant; plugs in on any electric socket (A.C. or D.C.) It can help your sales. Why not ask for full details?

FOR HOUSEHOLD USE

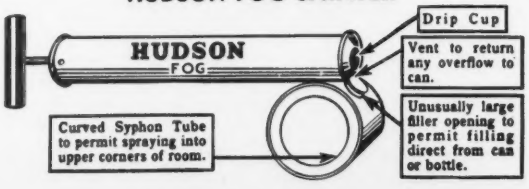
MRS. AMERICA WANTS A SPRAYER THAT REALLY KILLS



Housewives are tired of those little "popgun" sprayers. Supply them with Hudson Fogs—they're willing to pay the small difference in the cost. The Hudson Fog turns fly oils into a death-dealing vapor with enough power to send it billowing through the room. It builds repeat business by making your insecticide more effective.

Note the features. Ask us for prices. Whatever your application problem may be, Hudson engineers are ready to help you without cost or obligation. Call on us.

HUDSON FOG SPRAYER



"A Hudson Sprayer for Everybody—Everywhere"

H. D. HUDSON MFG. CO.

589 East Illinois Street Chicago

INNIS, SPEIDEN & CO.

Industrial Chemicals since 1816

117-119 LIBERTY STREET **NEW YORK**

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CHICAGO
722 West Hubbard Ave.
Haymarket 0991

BOSTON
41 Commercial Wharf
Capitol 3778

PHILADELPHIA
401 North Broad Street
Walnut 5328

CLEVELAND
2775 Pittsburgh Avenue
Cherry 6716

GLOVERSVILLE, N. Y.
8-10 West Street
Gloversville 3335

FACTORIES: Niagara Falls, N. Y.—Jersey City, N. J.

CHEMICALS

WAXES— **BEESWAX**—White Discs, Sunbleached—also Crude—Cases 112 lbs.
CANDELILLA—Light and Dark, Crude and Refined. Lump and Flake form Bags 150/200 lbs.
CARNAUBA—Refined, entirely cleaned and uniform. Lump and Flake form. Bags 150/200 lbs.
CARNAUBA—1, 2 and 3. Yellow 3 N.C. and 3 Chalky, Bags 200 lbs.
CERESIN—All degrees melting points; Orange, Yellow and White; Bags 110 and 200 lbs.
MONTAN—Bleached and Crude.

OZOKERITE— White and Yellow; 65 to 78° F. Stands 85 lbs.

JAPAN WAX—Cases 224 lbs.

LANOLIN—Refined, U. S. P. Domestic and Imported.

LARVACIDE—(Chlorpicrin) Fumigant. Cylinders 10 to 100 lbs.

CAUSTIC POTASH—Flake, Solid, Granular, Broken, Walnut and Liquid.

CARBONATE POTASH—Calcined, 80/85%—96/98%—98/100%—also LIQUID, Water White, sparkling clear; guaranteed minimum 47% K_2CO_3.

CAUSTIC SODA—Solid fused 76%, drums 700 lbs.—Flake 76%, drums 125 and 400 lbs. Crystals, bbls. and drums, 500 lbs. Ground, drums 500 lbs. Liquid, tanks and drums.

BLEACHING POWDER—(Chloride of Lime) Exceptionally uniform.

STEARIC ACID— Imported, double and triple pressed; powder and slabs; bags and cases, 221 lbs.

OLEIC ACID— Red and White.

SOFT AMORPHOUS SILICA—For use in Paints and Cleansing and Polishing Materials. Water and Dry Ground. Uniformly fine.

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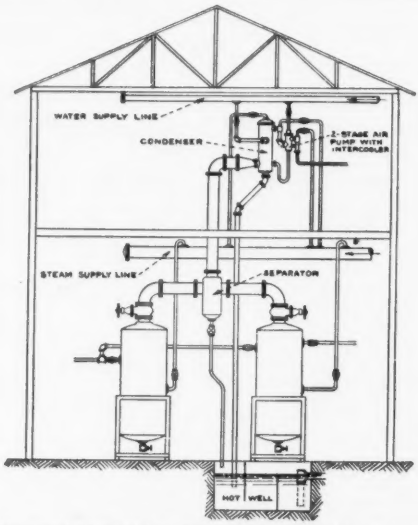
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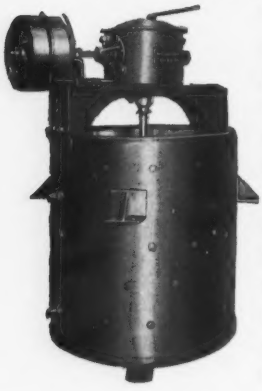
NEW YORK SOAP CORP.

294 PEARL STREET **NEW YORK CITY, N. Y.**

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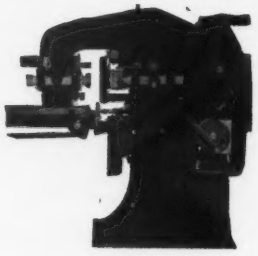
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This Newman brand new, all steel steam jacketed soap crutcher will crutch any kind of soap. We also build another crutcher especially adapted for laundry soap in addition to other new soap machinery such as frames, cutting tables, etc. Send for complete list.

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All used equipment is rebuilt in our own shop and is guaranteed in first-class condition.

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Niagara Caustic Soda liquid, flake or solid

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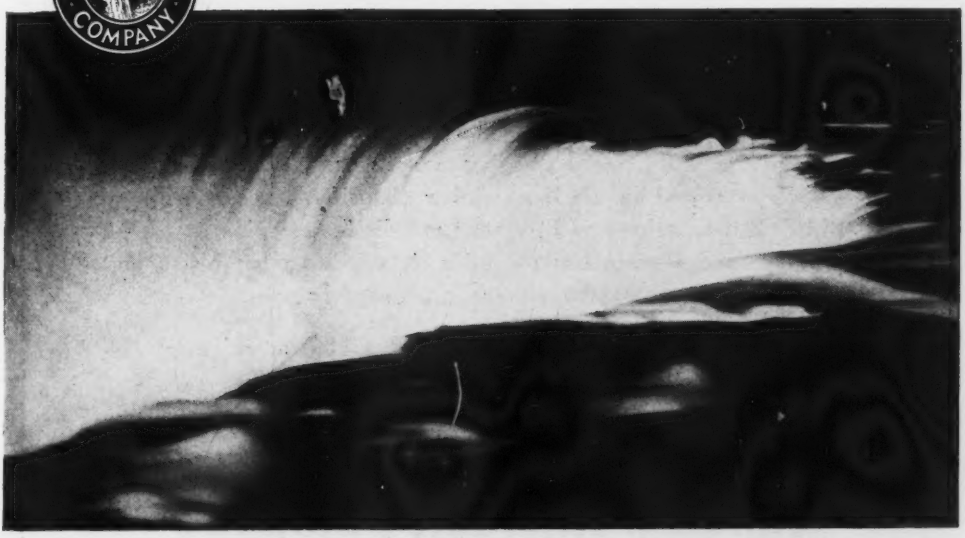
Niagara Alkali supplies liquid Caustic Soda of standard strength, 48° to 50° Baumé. This represents about 48 to 48.75 per cent of sodium hydroxide in the solution. It is shipped in tank cars of 8,000 gallons, averaging about 100,000 pounds of soda liquor, equivalent to approximately 46,000 pounds solid 76% soda; and in 10,000 gallon cars containing about 125,000 pounds of soda liquor, equivalent to approximately 58,000 pounds solid 76% soda.

Niagara Caustic Potash liquid, flake or solid

The first made in this country! Our experience in producing this difficult chemical is valuable to *you.*

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  All our Pyrethrum basic ingredients are tested for Pyrethrum content by the Seil method and we make our own Peet-Grady chamber tests.

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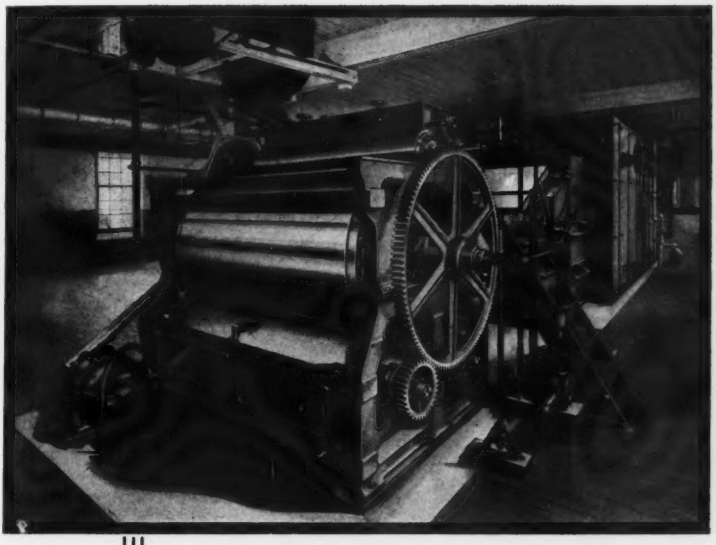
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The same high quality that has earned for Solvay Caustic Potash Liquor a preeminent place in the field is now obtainable in the Flake and Solid forms. Solvay Caustic Potash typifies the excellence which has made Solvay Products the outstanding choice of soap makers everywhere.

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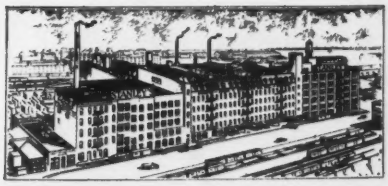
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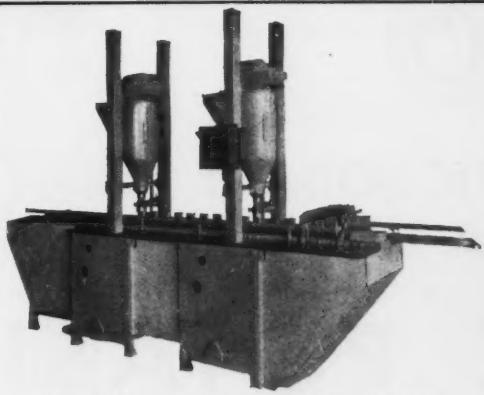
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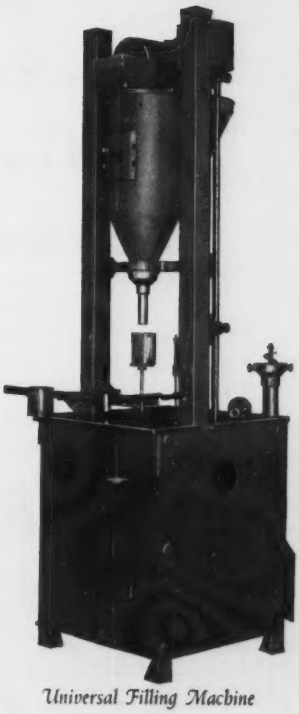
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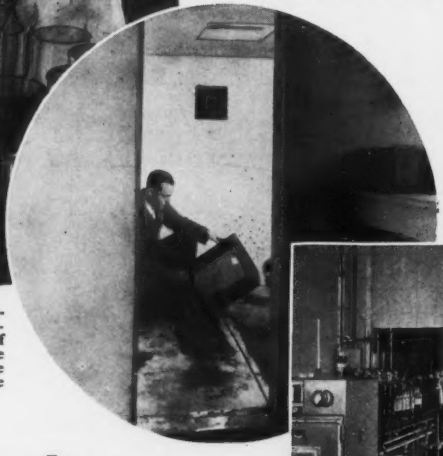
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Above: New "Campbell Turntable" Testing Equipment in the McCormick laboratories for making comparative tests of liquid insecticides. Tests are being made to establish the relationship between the "Campbell Turntable" method and the "Peet-Grady" method.

Below: "Peet-Grady" method Death-House in the McCormick laboratories for making comparative tests of liquid insecticides. Flies are scientifically raised for testing purposes in a special insectary in the laboratory.



Below: Analytical section of the McCormick laboratories, where, among other daily tests of insecticides, chemical assay of pyrethrum flowers is made by the Gnadinger and Corl and the H. A. Siel methods.



The Most Complete Testing Laboratories in the Insecticide Industry

PYRETHROL 20: A uniform, standardized pyrethrum concentrate, containing not less than 2.0 grams of pyrethrins per 100 c.c. Controlled by chemical assay, and checked by actual spraying on household insects. Made with a petroleum oil base, refined to complete freedom from kerosene odor.

PYRETHRUM POWDER: Finest available, with a known high pyrethrin content. Ground extremely fine—contains more killing particles per ounce—remains suspended in the air longer. More effective and economical because it comes into more intimate contact with the vital parts of the insect's body.

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Goris & Arnstein, 3700 Racine Ave., Chicago
Hammill & Gillespie, 225 Broadway, N.Y.
Jungmann & Co., 157 Chambers St., N. Y. Inside back cover
Mid-Co. Products Co., 2 Railway Exch. Bldg., Kansas City, Mo.
Natural Products Co., 307 W. 8th St., Los Angeles, Cal.
National Pumice Stone Co., Inc., Foot of Halsey St., Astoria, L. I.
Jas. H. Rhodes & Co., 153 W. Hubbard St., Chicago
L. A. Salomon & Bro., 216 Pearl St., N. Y.
Tamms Silica Co., 229 N. La Salle St., Chicago
Whittaker Clark & Daniels, 260 W' B'way, N. Y.
Wishnick-Tumpeer, Inc., 295 Madison Ave., N.Y.

ACETONE

(see also Dealers)

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Cliffs-Dow Chemical Co., Marquette, Mich.
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R. W. Greeff & Co., 10 E. 40th St., N.Y.
Publicker Commercial Alcohol Co., 260 S. Broad St., Philadelphia
U. S. Industrial Chem. Co., 60 E. 42nd St., N.Y.

ACIDS (Sulfuric, Muriatic, Nitric, Acetic, Etc.)

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Dow Chemical Co., Midland, Mich., See page 26.
E. I. Du Pont de Nemours & Co., Wilmington, Del. See page 27
General Chemical Co., 40 Rector St., N.Y. See page 35.
Hooker Electrochemical Co., 60 E. 42nd St., N. Y. See page 39.
Innis, Speiden & Co., 117 Liberty St., N.Y. See page 43.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila., See pages 60,61.
Victor Chemical Wks., 141 W. Jackson Blvd., Chicago

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Armour Glue Wks., 1355 W. 31st St., Chicago
C. W. Campbell Co., 157 Chambers St., N.Y.
Dennison Mfg. Co., Framingham, Mass.
E. I. du Pont de Nemours & Co., Wilmington, Del. See page 27
W. H. Gage Glue Co., 19 S. Main St., St. Louis
Hull Co., 305 Washington St., Brooklyn
Mechling Bros. Chemical Co., Camden, N. J.
National Adhesives Corp., 822 Greenwich St., N.Y.
Philadelphia Quartz Co., 121 S. 3rd St., Phila.
Sanford Mfg. Co., W. Congress & Peoria St., Chicago
A. E. Staley Mfg. Co., Decature, Ill.
Standard Silicate Co., Bond Hill, Cincinnati
Stein, Hall & Co., 285 Madison Ave., N.Y.

AGITATORS

Alsop Engineering Corp., 17 W. 60th St., N. Y. See pages 6, 7.
Beach-Russ Co., 50 Church St., N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) See page 21.
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Edge Moor Iron Works, 30 Rockefeller Plaza, N. Y.
Ertel Engineering Corp., 120 E. 16th St., N.Y. See page 29.
Foster Pump Works, 50 Washington St., Bklyn.
Houchin Machinery Co., Hawthorne, N. J. See page 40.
Huber Machine Co., 259 46th St., Brooklyn See page 41.
J. M. Lehmann Co., 248 W. Broadway, N.Y.
Littleford Bros., 443 E. Pearl St., Cincinnati
Mixing Equipment Co., Inc., 1024 Garson Ave., Rochester, N. Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) See page 48.
Patterson Foundry & Machy. Co., East Liverpool, Ohio
Pfaudler Co., 89 East Ave., Rochester, N. Y.
Scientific Filter Co., 1 Franklin Sq., N.Y.
Ernest Scott & Co., P. O. Box 82, Fall River, Mass.
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An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
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Bowker Chemical Co., 50 Church St., N.Y.
California Spray Chemical Corp., 15 Shattuck Sq., Berkelev, Calif.
Chipman Chemical Co., Bound Brook, N. J.
Dow Chemical Co., Midland, Mich. See page 26.
James Good, Inc., Kensington, Phila. See page 38.
Jungmann & Co., 157 Chambers St., N.Y. See inside back cover.
Koppers Co., Koppers Bldg., Pittsburgh, Pa. See page 2.
Lethelin Products Co., Manhasset, N. Y.
McLaughlin, Gormley King Co., 1715—5th St., S. E., Minneapolis
Mechling Bros. Chemical Co., Camden, N. J.
Peck's Products Co., St. Louis, Mo.
Sherwin-Williams Co., 292 Madison Ave., N.Y.
Solvay Sales Corp., 40 Rector St., N. Y. See pages 64, 65.
Tobacco By-Products & Chem. Corp., Louisville, Ky.
White Tar Co. of N. Y., Belleville Turnpike, Kearny, N. J. See page 2.

AGRICULTURAL INSECTICIDE SPREADERS

American Cyanamid & Chem Corp., 30 Rockefeller Plaza, N.Y.
Ansbacher-Siegle Corp., Rosebank, S. I.
James Good, Inc., Kensington, Phila. **See page 38.**
Kay-Fries Chemicals, Inc., 180 Madison Ave., N.Y. **See page 9.**

AIR COMPRESSORS (see COMPRESSORS, AIR)

ALCOHOL (Ethyl and Denatured)

(see also Dealers)

American Coml. Alcohol Corp., 405 Lexington Ave., N.Y.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N.Y.
Commercial Solvents Corp., 230 Park Ave., N.Y.
Industrial Chem. Sales Co., Inc., 230 Park Ave., N.Y.
Pennsylvania Sugar Co., 139 S. 3rd St., Phila.
Publicker Coml. Alcohol Co., 260 S. Broad St., Phila.
U. S. Industrial Alcohol Co., 60 E. 42nd St., N.Y.

ALCOHOL (Methyl or Wood)

(see also Dealers)

Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N.Y.
Cliffs-Dow Chemical Co., Marquette, Mich.
Commercial Solvents Corp., 230 Park Ave., N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Industrial Chem. Sales Co., 230 Park Ave., N.Y.
Publicker Commercial Alcohol Co., 260 S. Broad St., Phila.
U. S. Industrial Alcohol Co., 60 E. 42nd St., N.Y.
Wood Products Co., Buffalo, N.Y.

ALKALIES, see CAUSTIC SODA, SODA ASH, CAUSTIC POTASH, ETC.

ALUMINUM FOIL

Aluminum Co. of America, Gulf Bldg., Pittsburgh
Reynolds Metals Co., 19 Rector St., N. Y. C.

ALUMINUM STEARATE (see STEARATES)

ALUMS

(see also Dealers)

Aluminum Co. of America, Gulf Bldg., Pittsburg
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Armour Ammonia Wks., 1335 W. 31st St., Chicago
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Chemical Co., 40 Rector St., N.Y. **See pagea 35.**
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Paper Makers Chem. Corp., Kalamazoo, Mich.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila., **See pages 60, 61.**
Stauffer Chem. Co., 420 Lexington Ave., N.Y.

AMALGAMATORS (See Soap Machinery)

AMMONIA WATER

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Barrett Co., 40 Rector St., N.Y. **See page 16.**
Henry W. Bower Chemical Co., Phila.
Bowker Chem. Co., 50 Church St., N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Chemical Co., 40 Rector St., N.Y. **See page 35.**
Mathieson Alkali Works, 60 E. 42nd St., N.Y.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila., **See pages 60, 61.**

AMMONIUM BI-FLUORIDE (See Fluorides)

AMMONIUM CARBONATE

(see also Dealers)

American-British Chem. Supplies, Inc., 180 Madison Ave., N.Y. **See page 9.**
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**

AMMONIUM CHLORIDE

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Jungmann & Co., 157 Chambers St., N. Y. **Inside back cover.**
Solvay Sales Corp., 40 Rector St., N. Y. **See pages 64, 65.**
Jos. Turner & Co., 630 Fifth Ave., N. Y. **See page 70.**

AMMONIUM PERSULFATE (see POTASSIUM PERSULFATE)

AMYL CINNAMIC ALDEHYDE (see AROMATIC CHEMICALS)

Buyers' Guide Section

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for 1937

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A buying directory showing sources of supply for raw materials, machinery, equipment, etc. used by manufacturers of soaps, disinfectants, insecticides and allied products — also Bulk Suppliers.

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A. C. Drury & Co., 219 E. North Water St., Chicago
K. F. Griffiths Co., 110 E. 42nd St., N.Y.
Goris & Arnstein, 3700 Racine Ave., Chicago
Hammill & Gillespie, 225 Broadway, N.Y.
Jungmann & Co., 157 Chambers St., N. Y. Inside back cover
Mid-Co. Products Co., 2 Railway Exch. Bldg., Kansas City, Mo.
Natural Products Co., 307 W. 8th St., Los Angeles, Cal.
National Pumice Stone Co., Inc., Foot of Halsey St., Astoria, L. I.
Jas. H. Rhodes & Co., 153 W. Hubbard St., Chicago
L. A. Salomon & Bro., 216 Pearl St., N. Y.
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R. W. Greeff & Co., 10 E. 40th St., N.Y.
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Stein, Hall & Co., 285 Madison Ave., N.Y.

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Edge Moor Iron Works, 30 Rockefeller Plaza, N. Y.
Ertel Engineering Corp., 120 E. 16th St., N.Y. See page 29.
Foster Pump Works, 50 Washington St., Bklyn.
Houchin Machinery Co., Hawthorne, N. J. See page 40.
Huber Machine Co., 259 46th St., Brooklyn See page 41.
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Scientific Filter Co., 1 Franklin Sq., N.Y.
Ernest Scott & Co., P. O. Box 82, Fall River, Mass.
Sowers Mfg. Co., 1296 Niagara St., Buffalo
Sprout Waldron & Co., Muncy, Pa.
Struthers-Wells Co., Warren, Pa.

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Ansbacher-Siegle Corp., Rosebank, S. I.
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California Spray Chemical Corp., 15 Shattuck Sq., Berkelev, Calif.
Chipman Chemical Co., Bound Brook, N. J.
Dow Chemical Co., Midland, Mich. See page 26.
James Good, Inc., Kensington, Phila. See page 38.
Jungmann & Co., 157 Chambers St., N.Y. See inside back cover.
Koppers Co., Koppers Bldg., Pittsburgh, Pa. See page 2.
Lethelin Products Co., Manhasset, N. Y.
McLaughlin, Gormley King Co., 1715—5th St., S. E., Minneapolis
Mechling Bros. Chemical Co., Camden, N. J.
Peck's Products Co., St. Louis, Mo.
Sherwin-Williams Co., 292 Madison Ave., N.Y.
Solvay Sales Corp., 40 Rector St., N. Y. See pages 64, 65.
Tobacco By-Products & Chem. Corp., Louisville, Ky.
White Tar Co. of N. Y., Belleville Turnpike, Kearny, N. J. See page 2.

AGRICULTURAL INSECTICIDE SPREADERS

American Cyanamid & Chem Corp., 30 Rockefeller Plaza, N.Y.
Ansbacher-Siegle Corp., Rosebank, S. I.
James Good, Inc., Kensington, Phila. **See page 38.**
Kay-Fries Chemicals, Inc., 180 Madison Ave., N.Y. **See page 9.**

AIR COMPRESSORS (see COMPRESSORS, AIR)

ALCOHOL (Ethyl and Denatured)

(see also Dealers)

American Coml. Alcohol Corp., 405 Lexington Ave., N.Y.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N.Y.
Commercial Solvents Corp., 230 Park Ave., N.Y.
Industrial Chem. Sales Co., Inc., 230 Park Ave., N.Y.
Pennsylvania Sugar Co., 139 S. 3rd St., Phila.
Publicker Coml. Alcohol Co., 260 S. Broad St., Phila.
U. S. Industrial Alcohol Co., 60 E. 42nd St., N.Y.

ALCOHOL (Methyl or Wood)

(see also Dealers)

Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N.Y.
Cliffs-Dow Chemical Co., Marquette, Mich.
Commercial Solvents Corp., 230 Park Ave., N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Industrial Chem. Sales Co., 230 Park Ave., N.Y.
Publicker Commercial Alcohol Co., 260 S. Broad St., Phila.
U. S. Industrial Alcohol Co., 60 E. 42nd St., N.Y.
Wood Products Co., Buffalo, N.Y.

ALKALIES, see CAUSTIC SODA, SODA ASH, CAUSTIC POTASH, ETC.

ALUMINUM FOIL

Aluminum Co. of America, Gulf Bldg., Pittsburgh
Reynolds Metals Co., 19 Rector St., N. Y. C.

ALUMINUM STEARATE (see STEARATES)

ALUMS

(see also Dealers)

Aluminum Co. of America, Gulf Bldg., Pittsburg
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Armour Ammonia Wks., 1355 W. 31st St., Chicago
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Chemical Co., 40 Rector St., N.Y. **See pagea 35.**
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Paper Makers Chem. Corp., Kalamazoo, Mich.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila., **See pages 60, 61.**
Stauffer Chem. Co., 420 Lexington Ave., N.Y.

AMALGAMATORS (See Soap Machinery)

AMMONIA WATER

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Barrett Co., 40 Rector St., N.Y. **See page 16.**
Henry W. Bower Chemical Co., Phila.
Bowker Chem. Co., 50 Church St., N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Chemical Co., 40 Rector St., N.Y. **See page 35.**
Mathieson Alkali Works, 60 E. 42nd St., N.Y.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila., **See pages 60, 61.**

AMMONIUM BI-FLUORIDE (See Fluorides)

AMMONIUM CARBONATE

(see also Dealers)

American-British Chem. Supplies, Inc., 180 Madison Ave., N.Y. **See page 9.**
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**

AMMONIUM CHLORIDE

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Jungmann & Co., 157 Chambers St., N. Y. **Inside back cover.**
Solvay Sales Corp., 40 Rector St., N. Y. **See pages 64, 65.**
Jos. Turner & Co., 630 Fifth Ave., N. Y. **See page 70.**

AMMONIUM PERSULFATE (see POTASSIUM PERSULFATE)

AMYL CINNAMIC ALDEHYDE (see AROMATIC CHEMICALS)

AMYL SALICYLATE (see AROMATIC CHEMICALS)

ANIMAL DIPS (see CATTLE DIPS)

ANISE OIL (see ESSENTIAL OILS)

ANISIC ALDEHYDE (see AROMATIC CHEMICALS)

ANT POISONS

An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Calif.
Buckeye Chem. & Specialty Co., 131 E. 23rd St., N. Y.
Geo. H. Conn Co., Freeport, Ill.
Chemical Supply Co., 2450 Canal Rd., Cleveland.
Exterminating Materials Co., 712 Amsterdam Ave., N. Y.
Fuld Bros., Inc., 702 S. Wolf St., Baltimore
See page 33.
Lethelin Products Co., Manhasset, N.Y.
Maywood Pest Exterminators, 1206 S. 1st Ave., Maywood, Ill.
John Opitz, Inc., 50-14—39th St., Long Island City, N.Y.
Ore & Chemical Corp., 80 Broad St., N.Y.
Soilicide Labs., 8 Laurel Pl., Upper Montclair, N. J.

AROMATIC CHEMICALS (for perfuming)

Allondon, S. A., 246 Pearl St., N.Y.
American-British Chem. Supplies, Inc., 180 Madison Ave., N.Y. **See page 9.**
van Ameringen-Haebler, Inc., 315—4th Ave., N.Y. **See pages 10, 11**
Aromatic Products, Inc., 15 E. 30th St., N.Y.
See page 13.
Arthur Bennett, Inc., 109 W. Austin Ave., Chicago
Ph. Chalyer, Inc., 160 E. 56th St., N. Y.
Antoine Chiris Co., 147 Waverly Pl., N.Y.
Compagnie Parento, Inc., Croton-on-Hudson, N.Y.
Dodge & Olcott Co., 180 Varick St., N.Y.
Dow Chemical Co., Midland, Mich. See page 26.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago, Ill.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. **See page facing page 1.**
Felton Chemical Co., 603 Johnson Ave., Bklyn.
See page 31.
Firmenich & Co., 135 Fifth Ave., N. Y.
Chas. Fischbeck Co., 119 W. 19th St., N. Y.
See page 32.
Florasynth Laboratories, 1513 Olmstead Ave., Bronx, N. Y.
Benj. French, Inc., 160—5th Ave., N.Y.
Fritzsche Brothers, Inc., 76—9th Ave., N.Y.
General Drug Co., 170 Varick St., N.Y.
Givaudan-Delawanna, Inc., 80—5th Ave., N.Y.
See inside front cover, 37.
Heyden Chemical Corp., 50 Union Square, N. Y.
Industrial Organics, Inc., 151 W. 25th St., N.Y.
C. E. Ising Corp., Flushing, L. I., N.Y.
Kay-Fries Chemicals, Inc., 180 Madison Ave., N.Y. **See page 9.**
Pierre Lemoine, Inc., 62 Watts St., N.Y.
Geo. Lueders & Co., 427 Washington St., N.Y.
Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
A. Maschmeijer, Jr., Inc., 43 West 16th St., N.Y.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
Naugatuck Chem. Co., 1790 Broadway, N.Y.
Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago
Norda Essential Oil & Chem. Co., 601 W. 26th St., N. Y.
Northwestern Chemical Co., Wauwatosa, Wis.
Orbis Products Corp., 215 Pearl St., N.Y.
See page 4.
Pfaltz & Bauer, Inc., 350 Fifth Ave., N. Y.
Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.
Riviera Prods. Co., 215 W. Ohio St., Chicago, Ill.
H. C. Ryland, Inc., 161 Water St., N.Y.
Schimmel & Co., 601 W. 26th St., N.Y.
Edwin Seebach Co., 912 Broadway, N.Y.
Wm. G. Sibbach & Co., 201 S. 2nd Ave., Maywood, Ill.
George Silver Import Co., 353—4th Ave., N.Y.
Synfleur Scientific Labs., Monticello, N.Y.
A. M. Todd Co., Kalamazoo, Mich.
Trubek Labs., East Rutherford, N. J.
Ungerer & Co., 13 W. 20th St., N.Y.
See page facing inside front cover, 71.
Van Dyk & Co., 57 Wilkinson Ave., Jersey City, N. J.
Albert Verley, Inc., 11 E. Austin Ave., Chicego
See page 72.

ARSENATE OF LEAD (see LEAD ARSENATE)

ARSENICAL DIPS

Baird & McGuire, Inc., Holbrook, Mass.
See pages 14, 15.
Wm. Cooper & Nephews, 1909 Clifton Ave., Chicago
General Chemical Co., 40 Rector St., N.Y.
See page 35.
James Good, Inc., Kensington, Phila.
See page 38.
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Koppers Co., Koppers Bldg., Pittsburgh
See page 2.
McLaughlin, Gormley King Co., Minneapolis
White Tar Co., Kearny, N. J. **See page 2.**

ARSENIC

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
American Smelting & Refining Co., 120 Broadway, N.Y.
Charles Hardy, Inc., 415 Lexington Ave., N.Y.
Harshaw Chemical Co., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 43.
Pfaltz & Bauer, Inc., 350 Fifth Ave., N. Y.

AUTO SOAPS (See Potash Soaps)

BAGS (Cloth)

Bemis Bro. Bag Co., 418 Poplar St., St. Louis
Central Bag & Burlap Co.,
4513 S. Western Blvd., Chicago
Chase Bag Co., 155 E. 44th St., N.Y.
Dayton Bag & Burlap Co., Dayton, O.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Hammond Bag & Paper Co.,
Wellsburg, W. Va.
Mente & Co., New Orleans, La.
Paper Service Co., Lockland, Cincinnati

BAGS AND BAG LINERS (Paper)

Arkell Safety Bag Co., 10 E. 40th St., N.Y.
Bemis Bro. Bag Co., 418 Poplar St., St. Louis
Canister Co., Phillipsburg, N. J.
Chase Bag Co., 155 E. 44th St., N. Y.
Crepe-Kraft Co., 114 Adams St., Newark, N. J.
Hammond Bag & Paper Co.,
Wellsburg, W. Va.
Nashua Gummed & Coated Paper Co.,
Nashua, N. H.
Paper Service Co., P. O. Box 107, Lockland,
Cincinnati
St. Regis Paper Co., 230 Park Ave., N.Y.
Union Bag & Paper Co., 233 B'way, N.Y.

BAGS (Waterproof)

Bemis Bro. Bag Co., 418 Poplar St., St. Louis
Chase Bag Co., 155 E. 44th St., N.Y.
Hammond Bag & Paper Co.,
Wellsburg, W. Va.
Paper Service Co., P. O. Box 107, Lockland,
Cincinnati
St. Regis Paper Co., 230 Park Ave., N.Y

BALSAMS

van Ameringen-Haebler, Inc.,
315—4th Ave., N.Y. **See pages 10, 11.**
Antoine Chiris Co., 147 Waverly Pl., N.Y.
Aromatic Products, Inc., 15 E. 30th St., N.Y.
See page 13.
Dodge & Olcott Co., 180 Varick St., N.Y.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
A. C. Drury & Co., 219 East North Water St.,
Chicago
Fritzsche Brothers, Inc., 76—9th Ave., N.Y.
Geo. Lueders & Co., 427 Washington St., N.Y.
Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
Orbis Products Corp., 215 Pearl St., N.Y.
See page 4
S. B. Penick & Co., 132 Nassau St., N.Y.
See page 51
Riviera Products Co., 215 W. Ohio St., Chicago
Frank B. Ross Co., 79 Wall St., N.Y.
H. C. Ryland, Inc., 161 Water St., N.Y.
Schimmel & Co., 601 W. 26th St., N.Y.
Ungerer & Co., 13 W. 20th St., N.Y.
See page facing inside front cover, 71
Albert Verley, Inc., 11 E. Austin Ave., Chicago
See page 72

BARIUM CARBONATE

Alton Barium Prods. Co., Alton, Ill.
American Cyanamid & Chem. Corp.,
30 Rockefeller Plaza, N.Y.
E. I. du Pont de Nemours & Co.,
Wilmington, Del. **See page 27.**
Fezandie & Sperrle, 205 Fulton St., N.Y.
Foote Mineral Co., 1609 Summer St.,
Philadelphia
Harshaw Chemical Co.,
1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 43
Merck & Co., Rahway, N. J.
Wishnick-Tumpeer, Inc., 295 Madison Ave.,
N.Y.

BARREL LINERS (See BAGS AND BAG LINERS)

BARRELS (Fibre)

Canister Co., Phillipsburg, N. J.
Carpenter Container Co., 147—41st St., Bklyn.
Champion Container Co., Water & Morris Sts.,
Philadelphia
Container Co., Van Wert, O.
Diamond State Fibre Co., Bridgeport, Pa.
Master Package Corp., Owen, Wisc.
Rogers Fibre Co., 210 Lincoln St., Boston
Seymour & Peck Co., (Plywood)
917 W. 29th St., Chicago
Spaulding Fibre Co., Rochester, N. H.

BARRELS (Steel)

American Cooperage Co., Maurer, N.J.
American Steel Package Co., Defiance, O.
Draper Mfg. Co., Cleveland, O.
Fetter Steel Barrel Corp., Buffalo
Globe Steel Barrel Co., Cleveland
Manion Steel Barrel Co., Rouseville, Pa.
Meurer Steel Barrel Co., 105 Avenue L.,
Newark, N. J.
National Steel Barrel Co., 3860 E. 91st St.,
Cleveland
Niles Steel Prod. Co., 465 Walnut St.,
Niles, Ohio
Petroleum Iron Works Co., Sharon, Pa.
Pittsburgh Can Co., Pittsburgh
Pressed Steel Tank Co., Milwaukee, Wis.
Republic Steel Package Co., 7930 Jones Rd.
Cleveland
St. Louis Steel Package Co., St. Louis, Mo.
John Trageser Steam Copper Works,
Grand Ave., Maspeth, L. I., N.Y.
Wackman Welded Ware Co., 7th & Victor Sts.,
St. Louis
Wheeling Corrugating Co., Wheeling, W. Va.
Wilson & Bennett Mfg. Co.,
6532 S. Menard St., Chicago

BARRELS (Used Steel)

American Cooperage Co., Maurer, N.J.
Newark Steel Drum Co., Linden, N. J.
Newman Tallow & Soap Machinery Co.,
1051 W. 35th St., Chicago **See page 48.**
Snow Brokerage Co., 15 William St., N.Y.
See page facing 3rd cover.

BARRELS (Wooden)

Allied Barrel Co., Oil City, Pa.
American Barrel Co., 205 Bridge St.,
Salem, Mass.
American Cooperage Co., Maurer, N.J.

BARRELS (Wooden) (Cont'd)

Atlantic Tank & Barrel Corp., North Bergen, N. J.
Colwell Cooperage Co., Jersey Ave., Jersey City, N. J.
J. D. Hollingshead Co., 612 N. Michigan Ave., Chicago
Louisville Cooperage Co., Louisville, Ky.
Michel Cooperage Co., Sandusky, O.
Weinrick Cooperage Co., Burlington, Iowa
Western Cooperage Co., Portland, Oregon

BARREL TILTERS

Economy Eng. Co., 2651 W. Van Buren St., Chicago
Schwenck Safety Device Corp., 80 Broad St., N.Y.

BATH SALT COLORS (See COLORS)

BATH SALTS

Eagle Soap Corp., Huntington, Ind. See page 28.
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
Lightfoot-Schultz Co., 1412 Park Ave., Hoboken, N. J.
Geo. A. Schmidt Co., 236 W. North Ave., Chgo.
Solvay Sales Corp., 40 Rector St., N.Y. (Unperfumed) See pages 64, 65.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago Hoboken, N. J.

BAY OIL (see ESSENTIAL OILS)

BAY RUM

P. R. Dreyer Inc., 12 E. 12th St., N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Givaudan-Delawanna, Inc., 80—5th Ave., N.Y. See inside front cover, 37.
Chas. L. Huisking & Co., 155 Varick St., N.Y.
Lanman & Kemp-Barclay Co., 135 Water St., N.Y.
McKesson & Robbins, 79 Cliff St., N.Y.
Norda Essential Oil & Chem. Co., 601 W. 26th St., N.Y.
Ungerer & Co., 13 W. 20th St., N.Y. See page facing inside front cover, 71.

BEES WAX

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Aromatic Products, Inc., 15 E. 30th St., N.Y. See page 13.
Balfour, Guthrie & Co., Ltd. 67 Wall St., N.Y.
Cantol Wax Co., Bloomington, Ind.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
A. C. Drury & Co., 219 East North Water St., Chicago
Innis, Speiden & Co., 117 Liberty St., N.Y. See page 43.
Koster-Keunen, Sayville, L. I., N.Y.
Theodore Leonhard Wax Co., Haledon, Paterson, N. J.
George H. Lincks, 123 Front St., N.Y.
Muench-Kreuzer Candle Co., Syracuse, N.Y.
Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago
Orbis Products Corp., 215 Pearl St., N.Y. See page 4.
S. B. Penick & Co., 132 Nassau St., N.Y. See page 51.
Frank G. Ross Co., 79 Wall St., N.Y.
L. A. Salomon & Bro., 216 Pearl St., N.Y.
Strohmeyer & Arpe Co., 139 Franklin St., N.Y.
Will & Baumer Candle Co., Syracuse, N.Y.

BELLOWS, INSECT POWDER

Acmeline, Inc., Traverse City, Mich.
Central Rubber Products Co., 830 Broadway, N.Y. (Bulbs)
Electric Sprayit Co., 226 N. Broadway, Milwaukee, Wisc.
Exterminating Materials Co., 712 Amsterdam Ave., N. Y.
Feeny Mfg. Co., Muncie, Ind.
Getz Exterminators, Inc., 1139 Pine St., St. Louis See page 36.
Thomas W. Houchin Co., 9-15 McPherson Pl., Jersey City, N. J. (also Bulbs)
Lowell Sprayer Co., Lowell, Mich.

BENTONITE

American Colloid Co., 363 W. Superior St., Chicago
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Chas. B. Chrystal Co., 11 Park Pl., N.Y.
Hammill & Gillespie, 225 Broadway, N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. See page 43.
Jungmann & Co., 157 Chambers St., N.Y. See inside back cover.
Natural Prods. Co., 307 W. 8th St., Los Angeles
Owyhee Chemical Products Co., 300 W. Adams St., Chicago
Paper Makers Chemical Corp., Kalamazoo, Mich.
L. A. Salomon & Bro., 216 Pearl St., N.Y.
Silica Products Co., 700 Baltimore Ave., Kansas City, Mo.
A. E. Starkie Co., 1645 S. Kilburn Ave., Chicago See page 68.
Tamms Silica Co., 228 N. La Salle St., Chicago
Whittaker, Clark & Daniels, 260 W. Broadway, N.Y.
Wishnick-Tumpeer, Inc., 295 Madison Ave., N.Y.
Wyyodek Chemical Co., Cleveland

BENZALDEHYDE

van Ameringen-Haebler, Inc., 315—4th Ave., N.Y. See pages 10, 11
Dodge & Olcott Co., 180 Varick St., N.Y.
Dow Chemical Co., Midland, Mich., See page 26.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
E. I. du Pont de Nemours Co., Inc., Wilmington, Del. See page facing page 1
Felton Chemical Co., 603 Johnson Ave., Bklyn. See page 31.
Fritzsche Brothers, Inc., 76—9th Ave., N.Y.
Heyden Chem. Co., 50 Union Sq., N.Y.
Givaudan-Delawanna, Inc., 80—5th Ave., N.Y. See inside front cover, 37.

BENZALDEHYDE (Cont'd)

Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
Orbis Products Corp., 215 Pearl St., N.Y. **See page 4.**
Solvay Sales Corp., 40 Rector St., N.Y. **See pages 64, 65.**
Ungerer & Co., 13 W. 20th St., N.Y. **See page facing inside front cover, 71.**
Van Dyk & Co., 57 Wilkinson Ave., Jersey City, N. J.
Albert Verley, Inc., 11 E. Austin Ave., Chicago **See page 72.**

BENZENE (Benzol)

Barrett Co., 40 Rector St., N.Y. **See page 16.**
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
Wm. Cooper & Nephews, 1909 Clifton Ave., Chicago
Hydrocarbon Products, 500 Fifth Ave., N.Y.
William E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
Koppers Co., Koppers Bldg., Pittsburgh **See page 2.**
Neville Co., Pittsburgh

BERGAMOT OIL (see ESSENTIAL OILS)

BICHROMATES

Mutual Chem. Co. of America, 270 Madison Ave., N.Y.
Natural Prods. Refining Co., Jersey City, N. J.

BLEACHING AGENTS (Chlorine, Peroxide, etc.)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Buffalo Electro Chem. Co., River Rd. & Sawyer Ave., Buffalo, N.Y.
Hooker Electrochemical Co., 60 E. 42nd St., N.Y. **See page 39.**
Industrial Chem. Sales Co., 230 Park Ave., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Mathieson Alkali Works, 60 E. 42nd St., N.Y.
Niagara Alkali Co., 9 E. 41st St., N.Y. **See page 49.**
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila. **See pages 60, 61.**
Solvay Sales Corp., 40 Rector St., N.Y. **See pages 64, 65.**
Joseph Turner & Co., 630—5th Ave., N.Y. **See page 70.**
Warner Chem. Co., Chrysler Bldg., N.Y. **See page 73.**

BLEACHING EQUIPMENT (for OILS), (see DEODORIZING EQUIPMENT)

BLEACHING POWDER (Chloride of Lime)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Faesy & Besthoff, Inc., 22 E. 40th St., N.Y.
Hooker Electrochemical Co., 60 E. 42nd St., N.Y. **See page 39.**
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Mathieson Alkali Works, 60 E. 42nd St., N.Y.
Niagara Alkali Co., 9 E. 41st St., N.Y. **See page 49.**
Stauffer Chem. Co., 420 Lexington Ave., N.Y.
Joseph Turner & Co., 630—5th Ave., N.Y. **See page 70.**

BLOCK HOLDERS (see HOLDERS, DEODORIZING BLOCK)

BLOWERS for POWDER INSECTICIDES (see BELLOWS)

BLOWERS, ELECTRIC (see SPRAYERS, ELECTRIC)

BLUING (see LAUNDRY BLUE)

BOILER COMPOUNDS

Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods Co., 2526 W. Congress St., Chicago
Eagle Soap Corp., Huntington, Ind. **See page 28.**
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
Goulard & Olena, Inc., 140 Liberty St., N.Y.
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Palmer Prods. Inc., Waukesha, Wisc.
Peck's Products Co., St. Louis Mo.
John Sunshine Chem. Co., 604 W. Lake St., Chicago
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

BOIS de ROSE OIL (see ESSENTIAL OILS)

BORAX

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
American Potash & Chem. Corp., 233 Broadway, N.Y.
Borax Union, 420 Lexington Ave., N.Y.
General Chem. Co., 40 Rector St., N.Y. **See page 35.**
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Pacific Coast Borax Co., 51 Madison Ave., N.Y.
Paper Makers Chemical Corp., Kalamazoo, Mich.
Stauffer Chem. Co., 420 Lexington Ave., N.Y.
Wishnick-Tumpeer, Inc., 295 Madison Ave., N.Y.

BOTTLES

American Bottle Co., Toledo, O.
Anchor Cap & Closure Corp., 22 Queens St., Long Island City, N.Y.
Capstan Glass Co., Connellsville, Pa.
Graham Glass Co., Evansville, Ind.
Kimble Glass Co., Vineland, N. J.
Maryland Glass Corp., Baltimore, Md.
Millville Bottle Wks., Millville, N. J.
Owens Illinois Glass Co., Toledo, O.
F. E. Reed Glass Co., 860 Maple St., Rochester, N.Y.
Root Glass Co., Terre Haute, Ind.
Ruth Glass Co., Conshohocken, Pa.
Tygart Valley Glass Co., Washington, Pa.
T. C. Wheaton Co., Millville, N. J.

BOTTLE FILLING MACHINERY (see FILLING MACHINERY, BOTTLES)

BOTTLE WASHERS (see WASHING MACHINERY, BOTTLES)

BOX LINERS (see BAG LINERS)

BOXES (Corrugated and/or Fibre)

Brooklyn Fibre Syndicate, Decatur St. & Irving Ave., Brooklyn
Cambridge Paper Box Co., 196 Broadway, Cambridge, Mass.
Consolidated Paper Co., Monroe, Mich.
Container Corp. of America, 111 W. Washington St., Chicago
Robert Gair Co., 155 E. 44th St., N.Y.
Hinde & Dauch Paper Co., 215 Decatur St., Sandusky, O.
F. J. Kress Box Co., 2930 Liberty Ave., Pittsburgh
Owens-Illinois Glass Co., Toledo, O.
River Raisin Paper Co., Monroe, Mich.

BOXES (Fancy Paper)

Alderman-Fairchild Co., 367 Orchard St., Rochester, N.Y.
Baxter Paper Co., Brunswick, Maine
F. N. Burt Co., Ltd., 540 Seneca St., Buffalo, N.Y.
C. J. Fox Co., 236 Abron St., Providence, R. I.
Foxon Paper Co., 230 West Park St., Providence, R. I.
Robert Gair Co., 155 E. 44th St., N.Y.
R. R. Heywood, Inc., 26th St. & 9th Ave., N.Y.
R. J. Kittredge Co., 812 W. Superior St., Chicago
Pictorial Package Co., Aurora, Ill.
Potomac Lithograph Mfg. Co., Washington, D. C.
W. C. Ritchie & Co., 400 S. Green St., Chicago
Robertson Paper Box Co., Montville, Conn.
Geo. Schmitt & Co., Grand & Florence Sts., Brooklyn
Stobridge Lithographing Co., Norwood Station, Cincinnati
U. S. Printing & Lithographing Co., Norwood, Cincinnati

BOXES (Fancy Wooden)

Pilliod Cabinet Co., Swanton, O.

BROKERS (Chemicals)

S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
Dickerson Co., Drexel Bldg., Phila.
Otto A. C. Hagen Co., Public Ledger Bldg., Phila.
Chas. L. Huisking & Co., 155 Varick St., N.Y.
Leo Pasternak, Inc., 110 William St., N.Y.
Thompson-Hayward Chem. Co., Des Moines, Iowa
George Uhe, Inc., 80 8th Ave., N.Y.

BROKERS (Oils and Fats)

Irving R. Boody Co., 99 Wall St., N.Y.
Davidson Commission Co., 175 W. Jackson Blvd., Chicago
John W. Hall, 327 S. La Salle St., Chicago
Otto A. C. Hagen Co., Public Ledger Bldg., Phila.
Hentz & Co., 60 Beaver St., N.Y.
Chas. Hollingshed Co., Produce Exchange, N.Y.
Horner Commission Co., 15 William St., N.Y.
Miller & Co., 2401 Chestnut St., Philadelphia
Rayner & Stonington, Inc., 79 Wall St., N.Y.
J. H. Redding Co., 17 Battery Pl., N.Y.
Roesling, Monroe & Co., 99 Wall St., N.Y.
Snow Brokerage Co., 15 William St., N.Y.
See page facing 3rd cover.
Sterne & Son Co., Produce Exchange, N.Y.
Wm. M. Ware & Co., 88 Broad St., Boston
H. L. Webster & Co., 111 W. Washington St., Chicago
Welch, Holme & Clark Co., Inc., 563 Greenwich St., N.Y.
G. A. Wharry & Co., 24 State St., N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N.Y.
See page 75.
Wilson Brokerage, Inc., Produce Exchange, N.Y.

BROOMS

Alabama Broom & Mattress Co., Huntsville, Ala.
Burdett-Rose Mfg. Co., 6100 Independence Rd., Kansas, Mo.
Chattanooga Broom & Mop Co., Chattanooga, Tenn.
Detroit Quality Brush Mfg. Co., 5937 Michigan Ave., Detroit
Eagle Woodenware Co., Hamilton, O.
Kendallville Brush & Broom Co., Kendallville, Ind.
Tate Mfg. Co., 67 Sudbury St., Boston, Mass.
M. J. Toohey & Co., Fall River, Mass.

BRUSHES

American Standard Mfg. Co., 2509 Lime St., Chicago
Auburn Brush Co., Columbia, Pa.
Burdett-Rose Mfg. Co., 6100 Independence Rd., Kansas City, Mo.
Churchill Mfg. Co., 309 Douglas St., Sioux City, Ia.
Detroit Quality Brush Mfg. Co., 5937 Michigan Ave., Detroit

BRUSHES (Cont'd)

Flour City Brush Co., 422 S. 4th St., Minneapolis
J. I. Holcomb Co., Indianapolis
Illinois Brush Mfg. Co., 3316 Ogden Ave., Chicago
W. E. Kautenberg Co., P. O. Box 255, Freeport, Ill.
Kendallville Brush & Broom Co., Kendallville, Ind.
National Brush Co., Aurora, Ill.
New Jersey Brush Mfg. Co., Newton, N. J.
Opie Brush Co., Kansas City, Mo.
Ox Fibre Brush Co., Frederick, Md.
Palmer Prods, Inc., Waukesha, Wisc.
Pioneer Mfg. Co., Cleveland, O.
Sanitary Mfg. Co., 926 Ft. Wayne Ave., Indianapolis, Ind.
Silver-Chamberlin Co., Clayton, N. J.
Sullivan Brush Co., Terre Haute, Ind.
Tate Mfg. Co., 67 Sudbury St., Boston, Mass.

CAJUPUT OIL (see ESSENTIAL OILS)

CALCIUM HYPOCHLORITE (See BLEACHING POWDER)

CALCIUM STEARATE (see STEARATES)

CAMPHOR OIL, SASSAFRASSY (see ESSENTIAL OILS)

CAMPHOR OIL, WHITE (see ESSENTIAL OILS)

CAN FILLING MACHINERY (see FILLING MACHINERY, CANS)

CANANGA OIL (see ESSENTIAL OILS)

CANDELILLA WAX (see WAXES)

CANS (Fibre or Paper)

American Can Co., 230 Park Ave., N.Y.
Cambridge Paper Box Co., 196 Broadway, Cambridge, Mass.
Canister Co., Phillipsburg, N. J.
Cin-Made Corp., 294 Eggleston Ave., Cincinnati
Cleveland Container Co., 10630 Berea Rd., Cleveland
Cross Paper Products Co., 2595 Third Ave., N.Y.
Fonda Container Co. 41 Park Row, N.Y.
Master Package Co[illegible], Owen, Wisc.
Midwest Paper Container Co., 707 N. 3rd St., Minneapolis
National Can Co., 110 E. 42nd St., N.Y. **See page 46.**
National Paper Can Co., Cudahy, Wis.
R. C. Can Co., 121 Chambers St., St. Louis
W. C. Ritchie & Co., 8855 S. Baltimore Ave., Chicago
Sefton Fibre Can Co., 3275 Big Bend Blvd., St. Louis

CANS (Sifter Top)

American Can Co., 230 Park Ave., N.Y.
Anchor Cap & Closure Corp., 22 Queens St., Long Island City, N. Y.
Cambridge Paper Box Co., 196 Broadway, Cambridge, Mass.
Canister Co., Phillipsburg, N. J.
Cleveland Container Co., 10630 Berea Rd., Cleveland
Cin-Made Corp., 294 Eggleston Ave., Cincinnati
Continental Can Co., Inc., 100 E. 42nd St., N.Y. **See page 22.**
Crown Cork & Seal Co., Baltimore
Giles Can Co., 2444 W. 16th St., Chicago
National Can Co., 110 E. 42nd St., N.Y. **See page 46.**
Owens-Ollinois Can Co., Toledo, O.
R. C. Can Co., 121 Chambers St., St. Louis
Sefton Fibre Can Co., 3275 Big Bend Blvd., St. Louis

CANS (Steel) (see PAILS, Steel)

CANS (Tin)

American Can Co., 230 Park Ave., N.Y.
Anchor Cap & Closure Corp., 22 Queen St., Long Island City, N.Y.
J. L. Clark Mfg. Co., Rockford, Ill.
Columbia Can Co., 5221 Natural Bridge Ave., St. Louis
Continental Can Co., Inc., 100 E. 42nd St., N.Y. **See page 22.**
Crown Cork & Seal Co., Baltimore
General Can Co., 1603 S. Canal St., Chicago
Giles Can Co., 2444 W. 16th St., Chicago
Heekin Can Co., Cincinnati
Independent Can Co., 321 W. Ohio St., Chicago
National Can Co., 110 E. 42nd St., N.Y. **See page 46.**
Owens-Illinois Can Co., Toledo, O.
W. F. Robertson Steel & Iron Co., Springfield, O.
St. Louis Can Co., 904 S. 14th St., St. Louis

CAPPING MACHINERY

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
Anchor Cap & Closure Corp., 22 Queens St., Long Island City, N.Y.
Consolidated Packaging Machinery Corp., 1400 West Ave., Buffalo, N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Crown Cork & Seal Co., Baltimore, Md.
R. G. Haskins Co., 4642 W. Fulton St., Chicago
Karl Kiefer Machine Co., Cincinnati, Ohio
Ludcke Co., 41 N. Beacon St., Watertown, Mass.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Phoenix Metal Cap Co., 2444 W. 16th St., Chicago
Pneumatic Scale Corp., Norfolk Downs, Mass. **See pages 52, 53.**
Scientific Filter Co., 1 Franklin Sq., N.Y.
Triangle Package Machy. Co., 910 N. Spaulding Ave., Chicago

CAPPING MATERIALS

Du Pont Cellophane Co., 2 Park Ave., N.Y.
Ferdinand Gutmann & Co., 3611 14th Ave., Brooklyn
Sylvania Industrial Corp., Chanin Bldg., N.Y.

CAPS (Molded)

Anchor Cap & Closure Corp., 22 Queens St., Long Island City, N.Y.
Armstrong Cork & Insulation Co., Lancaster, Pa.
Bakelite Corp., Bound Brook, N. J.
General Plastics, Inc., N. Tonawanda, N.Y.
Owens-Illinois Glass Co., Toledo, O.
Resinox Corp., Terre Haute, Ind.
Toledo Synthetic Prods Co., Toledo, O.

CAPS (Metal)

Aluminum Co. of America, Gulf Bldg., Pittsburgh
Anchor Cap & Closure Corp., 22 Queens St., Long Island City, N.Y.
Armstrong Cork & Insulation Co., Lancaster, Pa.
Closure Service Co., Toledo, O.
Crown Cork & Seal Co., Eastern Ave. & Kresson St., Baltimore
Ferdinand Gutmann & Co., 14th Ave. & 37th St., Bklyn.
Kep-Ark, Inc., 412 Boylston St., Boston
National Can Co., 110 E. 42nd St., N.Y. **See page 46.**
National Seal Co., 14th Ave. & 37th St., Bklyn.
Owens-Illinois Glass Co., Toledo, O.
Phoenix Metal Cap Co., 2444 W. 16th St., Chicago
Williams Sealing Corp., Decatur, Ill.

CARAWAY OIL (see **ESSENTIAL OILS**)

CARBOLIC ACID, CRUDE (see **TAR ACID**)

CARBON BISULFIDE

(see also Dealers)

Dow Chemical Co., Midland, Mich., **See page 26.**
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Stauffer Chem. Co., 420 Lexington Ave., N.Y.
Warner Chemical Co., 405 Lexington Ave., N.Y. **See page 73.**

CARBON TETRACHLORIDE

(see also Dealers)

J. T. Baker Chemical Co., Phillipsburg, N. J.
Brown Co., Portland, Me.
Diamond Alkali Corp., 436 7th Ave., Pittsburgh
Dow Chemical Co., Midland, Mich., **See page 26.**
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Niagara Smelting Corp., Niagara Falls, N.Y.
Stauffer Chem. Co., 420 Lexington Ave., N.Y.
Warner Chemical Co., 405 Lexington Ave., N.Y. **See page 73.**

CARNAUBA WAX (see **WAXES**)

CARTON HANDLING SYSTEM

Self-Lifting Piano Truck Co., Findlay, Ohio

CARTON LINING MACHINES (see **LINING MACHINERY**)

CARTON SEALING MACHINERY (see **SEALING MACHINERY**)

CARTONING MACHINERY

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. L. Ferguson Co., Joliet, Ill.
Johnson Automatic Sealer Co., Battle Creek, Mich.
R. A. Jones & Co., Cincinnati, O.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Pneumatic Scale Corp., Norfolk Downs, Mass. **See pages 52, 53.**
F. B. Redington Co., 112 S. Sangamon St., Chicago
Stokes & Smith Co., 65 Summerdale Ave., Phila., Pa. **See page 69.**
Triangle Package Machinery Co., 906 N. Spaulding Ave., Chicago

CARTONS (Display and Knock Down)

Alderman-Fairchild Co., Rochester, N.Y.
F. N. Burt Co., 540 Seneca St., Buffalo, N.Y.
Consolidated Paper Co., Monroe, Mich.
Robert Gair Co., 155 E. 44th St., N.Y.
Nevins-Church Co., 250 Park Ave., N.Y.
New England Card & Paper Co., Springfield, Mass.
Pictorial Package Co., Aurora, Ill.
Randolph Box & Label Co., 843 W. Van Buren St., Chicago
W. C. Ritchie & Co., 8855 S. Baltimore Ave., Chicago
Robertson Paper Box Co., Inc., Montville, Conn.
George Schmitt & Co., Grand & Florence Sts., Bklyn.
U. S. Printing & Lithographing Co., Cincinnati, O.

CASE SEALING MACHINERY (see **SEALING MACHINERY**)

CASEIN

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Land-o'Lakes Creameries, Minneapolis
National Casein Co., 603 W. 80th St., Chicago
Paper Makers Chemical Corp., Kalamazoo, Mich.

CASES (Fibre) see BOXES, CANS (Fibre)

CASES (Corrugated) see BOXES

CASTILE SOAP, BAR, POWDER

Armour Soap Wks., 1355 W. 31st St., Chicago **See page 12.**
Cincinnati Soap Co., Cincinnati
Conti Products Corp., 155 Varick St., N.Y.
Kranich Soap Co., 54 Richards St., Brooklyn
Leghorn Trading Co., 155 E. 44th St., N.Y. **See page 45.**
Lockwood-Brackett Co., Waltham Station, Boston
Los Angeles Soap Co., Los Angeles, Calif.
Newell Gutradt Co., 350 Fremont St., San Francisco, Calif.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
John T. Stanley Co., 642 W. 30th St., N.Y. **See page 67.**
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

CASTILE SOAP, LIQUID

Antiseptol Co., 5524 Northwest Highway, Chicago
Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Davies-Young Soap Co., Dayton, O. **See page 23.**
Eagle Soap Corp., Huntington, Ind. **See page 28.**
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
James Good, Inc., Kensington, Phila. **See page 38.**
Haag Laboratories, Inc., 6101 S. May St., Chicago
Hunt Mfg. Co., Lisbon Rd., Cleveland
Kranich Soap Co., 54 Richards St., Brooklyn
Moore Bros., Co., 200 Hudson St., N.Y.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N.Y. **See page 67.**
U. S. Sanitary Spec. Corp., 435 S. Western Ave., Chicago
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

CASSIA OIL (see ESSENTIAL OILS)

CASTOR OIL

(see also Dealers)

Archer-Daniels-Midland Co., Minneapolis
Baker Castor Oil Co., 120 Broadway, N.Y.
Balfour, Guthrie & Co., 67 Wall St., N.Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Otto A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
National Oil Products Co., Harrison, N. J.
Spencer Kellogg & Sons, Buffalo, N.Y.
Snow Brokerage Co., 15 William St., N.Y. **See page facing 3rd cover.**
Welch, Holme & Clark Co., Inc., 563 Greenwich St., N.Y.

CATTLE DIPS AND SPRAYS

(see also Sheep Dips)

An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Cal.
Baird & McGuire, Holbrook, Mass. **See pages 14, 15.**
Barrett Co., 40 Rector St., N.Y. **See page 16.**
Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Chemical Compounding Corp., 262 Huron St., Bklyn.
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Clifton Chem. Co., 247 Front St., N.Y. **See page 19.**
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
General Chem. Co., 40 Rector St., N.Y. **See page 35.**
Globe Sanitary Supply Co., 2249 E. 38th St., Los Angeles
James Good, Inc., Kensington, Phila. **See page 38.**
Goulard & Olena, 140 Liberty St., N.Y.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Hockwald Chem. Co., 30 Bluxome St., San Francisco
Hunt Mfg. Co., Lisbon Rd., Cleveland
William E. Jordan & Bros., 2590 Atlantic Ave., Brooklyn
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Koppers Co., Koppers Bldg. **See page 2.** Pittsburgh, Pa.
Marshall Prods., Inc., 806 N. 1st St., St. Louis
McLaughlin, Gormley King Co., Minneapolis, Minn.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prod. Co., 522-40 N. 2nd St., St. Louis
Shores Co., Cedar Rapids, Ia.
Thompson-Hayward Chem. Co., Des Moines
Tobacco By-Products & Chem. Corp., Louisville, Ky.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Robert C. White Co., Falls of Schuylkill, Phila.
White Tar Co., Kearny, N. J. **See page 2.**

CATTLE SPRAY BASE (see PETROLEUM BASES)

CAUSTIC POTASH

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Faesy & Besthoff, 22 E. 40th St., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Niagara Alkali Co., 9 E. 41st St., N.Y. (Mfrs.) **See page 49.**
Solvay Sales Corp., 40 Rector St., N.Y. **See pages 64, 65.**
Joseph Turner & Co., 630—5th Ave., N.Y. **See page 70.**
Welch, Holme & Clark Co., 563 Greenwich St. N.Y.

CAUSTIC SODA

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Belle Alkali Co., Belle, W. Va.
Brown Company, Portland, Me.
Champion Fibre Co., Canton, N. C.
Columbia Alkali Co., 30 Rockefeller Plaza., N.Y. **See page 20.**
Diamond Alkali Co., 436 7th Ave., Pittsburgh
Dow Chemical Co., Midland, Mich., See page 26.
Great Western Electrochemical Co., San Francisco
Hooker Electrochemical Co., 60 E. 42nd St., N.Y. **See page 39.**
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Kimberley-Clark Paper Co., Neenah, Wis.
Mathieson Alkali Works, 60 E. 42nd St., N.Y.
Michigan Alkali Co., 60 E. 42nd St., N.Y.
Michigan Electrochemical Co., Menominee, Mich.
Niagara Alkali Co., 9 E. 41st St., N. Y. **See page 49.**
Niagara Smelting Corp., Niagara Falls, N.Y.
Oxford Paper Co., White Mountains, N. H.
Pennsylvania Salt Mfg. Co., Widener Bldg., Phila.
Solvay Sales Corp., 40 Rector St., N.Y. **See pages 64, 65.**
Stauffer Chem. Co., 420 Lexington Ave., N.Y.
Joseph Turner & Co., 630—5th Ave., N.Y. **See page 70.**
Warner Chemical Co., 405 Lexington Ave., N.Y. **See page 73.**

CEDAR LEAF OIL (see ESSENTIAL OILS)

CEDARWOOD OIL (see ESSENTIAL OILS)

CERESIN WAX (see WAXES)

CHALK (Calcium Carbonate)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
H. J. Baker & Bro., 271 Madison Ave., N.Y.
Binney & Smith Co., 41 E. 42nd St., N.Y.
Chas. B. Chrystal Co., 11 Park Pl., N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Fezandie & Sperrle, 205 Fulton St., N.Y.
E. Fougera & Co., 41 Maiden Lane, N.Y.
Goris & Arnstein, 37th & Racine Ave., Chicago
K. F. Griffiths Co., 110 E. 42nd St., N.Y.
Hammill & Gillespie, 225 Broadway, N.Y.
Industrial Chem. Sales Co., 230 Park Ave., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
James H. Rhodes & Co., 48-02 29th St., L. I. City, N.Y.
L. A. Salomon & Bro., 216 Pearl St., N.Y.
Tamms Silica Co., 228 N. La Salle St., Chicago
Wishnick-Tumpeer, Inc., 295 Madison Ave., N.Y.

CHAMOIS

Addison Sponge Co., 118 E. Court St., Cincinnati
Allied Industrial Prods. Co., 17 N. Elizabeth St., Chicago
Amer. Sponge & Chamois Co., 47 Ann St., N.Y.
Atlas Sponge Co., 291 Church St., N.Y.
Great Eastern Sponge & Chamois Co., 833 N. Patt. Pk. Ave., Baltimore
Jos. Niehaus Co., 341 W. 4th St., Cincinnati
James H. Rhodes & Co., 153 W. Hubbard St., Chicago
Schroeder & Tremayne, 500 N. Com'l St., St. Louis

CHILLING ROLLS

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
William Garrigue & Co., 9 S. Clinton St., Chicago
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
Huber Machine Co., 259—46th St., Brooklyn **See page 41.**
J. M. Lehmann Co., 248 W. Broadway, N.Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Proctor & Schwartz, 7th St. & Tabor Rd., Philadelphia **See page 57.**
C. G. Sargent's Sons Corp., Graniteville, Mass. **See page 62.**
F. J. Stokes Machine Co., 5974 E. Tabor Rd., Phila.

CHIPPERS (see SOAP MACHINERY)

CHIP SOAPS (Including Flakes)

Armour Soap Wks., 1355 W. 31st St., Chicago **See page 12.**
Cincinnati Soap Co., 7th & Elm Sts., Cincinnati
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Du Bois Soap Co., Cincinnati, Ohio
Hewitt Soap Co., Dayton, Ohio
Lever Bros. Co., Cambridge, Mass.
Los Angeles Soap Co., Los Angeles, Calif.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
National Milling & Chem. Co., Manayunk, Phil.
National Soap Co., 357 South 25th St., Tacoma, Wash.
Peck's Products Co., St. Louis, Mo.
Procter & Gamble Co., Cincinnati
Geo. Schmidt Co., 236 W. North Ave., Chicago, Ill.
John T. Stanley Co., 642 W. 30th St., N.Y. **See page 67.**
Swift & Co., Union Stock Yards, Chicago
Warren Soap Mfg. Co., 51 Warren St., Cambridge, Mass.
M. Werk Co., Cincinnati
Chas. W. Young & Co., Phila.

CHLORIDE OF LIME (see BLEACHING POWDER)

CHLORINE

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Columbia Alkali Corp., 30 Rockefeller Plaza, N.Y. **See page 20.**
Diamond Alkali Co., First Nat'l Bk. Bldg., Pittsburgh, Pa.
Electro Bleaching Gas Co., 9 E. 41st St., N.Y. **See page 49.**
Hooker Electrochemical Co. 60 E. 42nd St., N.Y. **See page 39.**
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Mathieson Alkali Works, 60 E. 42nd St., N.Y.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
Niagara Alkali Co., 9 E. 41st St., N.Y. **See page 49.**
Pennsylvania Salt Mfg. Co., Widener Bldg., Phila.
Solvay Sales Corp., 40 Rector St., N.Y. **See pages 64, 65.**
Warner Chemical Co., 405 Lexington Ave., N.Y. **See page 73.**

CHLORINE DISINFECTANTS **(see DISINFECTANTS)**

CHLOROFORM

Brown Company, Portland, Me.
Dow Chemical Co., Midland, Mich., **See page 26.**
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Mallinckrodt Chemical Works, St. Louis, Mo.
Merck & Co., Rahway, N. J.
Niagara Smelting Corp., Niagara Falls, N.Y.
Stauffer Chem. Co., 420 Lexington Ave., N.Y

CHLOROPHYLL **(see also ESSENTIAL OILS)**

American Chlorophyll, Inc., 570 Lexington Ave., N.Y.
A. C. Drury & Co., 219 E. North Water St., Chicago
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Interstate Color Co., 5 Beekman St., N.Y.
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Krembs & Co., 669 W. Ohio St., Chicago
Merck & Co., Rahway, N. J.
Pfaltz & Bauer, 350 5th Ave., N.Y.
R. J. Prentiss & Co., 100 Gold St., N.Y. **See page 56.**
Pylam Products Co., 799 Greenwich St., N.Y. **See page 58.**
Sandoz Chem. Works, Inc., 61 Van Dam St., N.Y.
Edwin Seebach Co., 912 Broadway, N.Y.
Welch, Holme & Clark Co., Inc., 563 Greenwich St., N.Y.

CITRAL **(see AROMATIC CHEMICALS)**

CITRONELLAL **(see AROMATIC CHEMICALS)**

CITRONELLA OIL **(see ESSENTIAL OILS)**

CITRONELLOL **(see AROMATIC CHEMICALS)**

CLAYS

American Colloid Co., 363 W. Superior St., Chicago
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Chas. B. Chrystal Co., 11 Park Pl., N.Y.
A. C. Drury & Co., 219 E. N. Water St., Chicago
Fezandie & Sperrle, 205 Fulton St., N.Y.
Goris & Arnstein, 37th & Racine Ave., Chgo.
Hammill & Gillespie, 225 Broadway, N.Y.
J. M. Huber, Inc., 460 W. 34th St., N.Y.
Illinois Silica Co., Cairo, Ill.
Industrial Chem. Sales Co., 230 Park Ave., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
International Silica Co., Cairo, Ill.
Natural Products Co., 307 W. 8th St., Los Angeles
National Sales Corp., 33 E. 13th St., Cinn.
Owyhee Chemical Products Co., 300 W. Adams St., Chicago
Paper Makers Chemical Corp., Kalamazoo, Mich.
Peerless Clay & Mineral Co., Pueblo, Colo.
L. A. Salomon & Bro., 216 Pearl St., N.Y.
A. E. Starkie Co., 1645 S. Kilburn Ave., Chicago **See page 68.**
Tamms Silica Co., 228 N. La Salle St., Chicago
United Clay Mines Corp., 101 Oakland St., Trenton, N. J.
Whittaker, Clark & Daniels, 260 W. Broadway, N.Y.
Wishnick-Tumpeer, Inc., 295 Madison Ave., N.Y.
Wyodak Chem. Co., 4600 E. 71st St., Cleveland

CLEANERS, LIQUID

American Chemical Paint Co., Ambler, Pa.
Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Chemical Supply Co., 2450 Canal Rd., Cleveland
Clifton Chem. Co., 247 Front St., N.Y. **See page 19.**
Davies-Young Soap Co., Dayton, O. **See page 23.**
Delta Chemical Co., 1815 Riverside Drive, N.Y.
Eagle Soap Corp., Huntington, Ind. **See page 28.**
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
James Good, Inc., Kensington, Phila. **See page 38.**
R. M. Hollingshead, 840 Cooper St., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
La Maison Prods. Inc., So. York St., Bklyn, N.Y.
Peck's Products Co., St. Louis, Mo.
Solshine Mfg. Co., 17 Caldwell St., Boston
Trojan Prods. & Mfg. Co., 3107 S. Wabash Ave., Chicago
White Tar Co., Kearny, N. J. **See page 2.**

CLEANING COMPOUNDS, DRY

American Chemical Paint Co., Ambler, Pa.
Antiseptol Co., 5524 Northwest Highway, Chicago
Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Cary Mfg. Co., Joliet, Ill.
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Clifton Chem. Co., 247 Front St., N.Y. **See page 19.**
Columbia Soap & Chem. Co., Inc., 217-221 Clara St., San Francisco
Crystal Labs., Inc., 21 W. Park Way, N. E., Pittsburgh
Delta Chemical Co., 1815 Riverside Drive, N.Y.
Eagle Soap Corp., Huntington, Ind. **See page 28.**
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
Globe Sanitary Supply Co., 2249 E. 38th St., Los Angeles
James Good, Inc., Kensington, Phila. **See page 38.**
Goulard & Olena, Inc., 140 Liberty St., N.Y.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Hockwald Chem. Co., 30 Bluxome St., San Francisco
R. M. Hollingshead, 840 Cooper St., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hull Co., 305 Washington St., Brooklyn
Hunt Mfg. Co., Lisbon Rd., Cleveland
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Los Angeles Soap Co., Los Angeles, Calif.
Mechling Bros. Chemical Co., Camden, N. J.
Nat'l Milling & Chem. Co., Manayunk, Phila.
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Soap & Chem. Wks., Seattle, Wash.
Pacific Chem. Co., 1421 N. Main St., Los Angeles
Palmer Products, Inc., Waukesha, Wis.
Paper Makers Chemical Corp., Kalamazoo, Mich.
Peck's Prod. Co., 522-40 N. 2nd St., St. Louis
Philadelphia Quartz Co., 123 S. 3rd St., Phila.
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Solshine Mfg. Co., 44 Brookline St., Boston
Solvay Sales Corp., 40 Rector St., N.Y. **See page 64, 65.**
Stevens Soap Corp., 200 Sullivan St., Bklyn.
John Sunshine Chem. Co., 604 W. Lake St., Chicago
Trojan Prods. & Mfg. Co., 3107 S. Wabash Ave., Chicago
United Cleanser Mfg. Co., Cambridge, Mass.
V. C. Products Co., Philadelphia
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.

CLEANING FLUIDS (Spotting Fluids)

Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Clifton Chem. Co., 247 Front St., N.Y. **See page 19.**
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
James Good, Inc., Kensington, Phila. **See page 38.**
Hubman Supply Co., 225 N. 4th St., Columbus, O.
La Maison Prods. Inc., So. York St., Brooklyn, N.Y.
McKesson & Robbins, Bridgeport, Conn.
Merck & Co., Rahway, N. J.
Moore Bros. Co., 200 Hudson St., N.Y.
Neverring Mfg. Co., 200 W. 34th St., N.Y.
Peck's Products Co., St. Louis, Mo.
Trojan Prods. & Mfg. Co., 3107 S. Wabash Ave., Chicago
Uncle Sam Chem. Co., 329 E. 29th St., N.Y.

CLIPS (for Collapsible Tubes) (see also TUBES, COLLAPSIBLE)

Acme Clip & Mfg. Co., 426 S. Clinton St., Chicago
George G. Rodgers Co., 183 Varick St., N.Y.

CLOSURES (see CAPS, CORKS, etc.)

CLOVE OIL (see ESSENTIAL OILS)

COAL TAR DISINFECTANTS (see DISINFECTANTS)

COAL TAR RAW MATERIALS

American-British Chem. Supplies, 180 Madison Ave., N.Y. **See page 9.**
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Baird & McGuire, Holbrook, Mass. **See pages 14, 15.**
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Barrett Co., 40 Rector St., N.Y. **See page 16.**
Wm. Cooper & Nephews, 1909 Clifton Ave., Chicago
Otto A. C. Hagen Corp., 929 Public Ledger Bldg., Phila.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
William E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
Koppers Co., Koppers Bldg., Pittsburgh, Pa. **See page 2.**
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
Neville Co., Pittsburgh, Pa.
Reilly Tar & Chem. Co., Indianapolis **See page 59.**
White Tar Co., Kearny, N. J. **See page 2.**

COCOA BUTTER

Walter Baker & Co., 159 Franklin St., N.Y.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Spencer Kellogg & Sons, Buffalo, N.Y.
R. F. Revson Co., 91 7th Ave., N.Y.
A. N. Stollwerck Co., Camden, N. J.

COCONUT OIL

(see also Brokers and Dealers)

Atkins, Kroll & Co., 250 California St., San Francisco
Balfour, Guthrie & Co., 67 Wall St., N.Y.
Best Foods, Inc., 88 Lexington Ave., N.Y.
Capital City Products Co., Columbus, O.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
El Dorado Oil Wks., 230 California St., San Francisco
Franklin Baker Co., 1500 Bloomfield St., Hoboken, N. J.
Spencer Kellogg & Sons, Buffalo, N.Y.
Los Angeles Soap Co., Los Angeles, Calif.
Philippine Mfg. Co., 244 Calle David, Manila, P. I.
Procter & Gamble Co., Cincinnati, O.
J. H. Redding Co., 17 Battery Pl., N.Y.
Smith-Weihman Co., 15 Moore St., N.Y.
See page 63.
Snow Brokerage Co., 15 William St., N.Y.
See page facing 3rd cover.
A. E. Starkie Co., 1645 S. Kilburn Ave., Chicago
See page 68.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N.Y.
See page 75.

COCONUT OIL SOAPS (Hard Water Bar)

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 12.
Baums Castorine Co., 200 Mathew St., Rome, N.Y.
James Counts Soap Co., 2nd & Washington Aves., St. Louis
Harley Soap Co., 2832 E. Pacific St., Phila., Pa.
Hewitt Soap Co., Dayton, Ohio
R. M. Hollingshead Corp., Camden, N. J.
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Los Angeles Soap Co., Los Angeles, Calif.
National Soap Co., 357 South 25th St., Tacoma, Wash.
Newell Gutradt Co., 350 Fremont St., San Francisco, Cal.
North Coast Soap & Chem. Works, Seattle, Wash.
Pacific Chem. Co., 1421 N. Main St., Los Angeles
Peck's Prod. Co., 522-40 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N.Y.
See page 67.
Swift & Co., Union Stock Yards, Chicago
Vliet Soap Co., 638 Monroe St., Brooklyn
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., Phila.

COLLAPSIBLE TUBES (see TUBES, COLLAPSIBLE)

COLLOID MILLS (see MILLS, COLLOID)

COLORS (see also ESSENTIAL OILS)

American Aniline Prod., Inc., 50 Union Sq., N.Y.
Stanley Doggett, Inc., 75 Varick St., N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Dyestuffs & Chemicals, Inc. 11th & Monroe Sts., St. Louis
Fezandie & Sperrle, 205 Fulton St., N.Y.
Geigy Co., 89 Barclay St., N.Y.
General Dyestuffs Corp., 230—5th Ave., N.Y.
Interstate Color Co., 5 Beekman St., N.Y.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Leeben Chem. Co., 389 Washington St., N.Y.
National Aniline & Chem. Co., 40 Rector St., N.Y.
Pylam Products Co., 799 Greenwich St., N.Y.
See page 58.
R. F. Revson Co., 91 7th Ave., N.Y.
Sandoz Chem. Wks., 61 Van Dam St., N.Y.
Welch, Holme & Clark Co., Inc., 563 Greenwich St., N.Y. (Export)

COMPOUND CRESOL SOLUTIONS (see DISINFECTANTS, COAL-TAR)

COMPRESSORS (Air)

Beach-Russ Co., 50 Church St., N.Y.
Binks Mfg. Co., 3114 Carroll Ave., Chicago
Consolidated Prods. Co., 15 Park Row, N.Y. (Used)
See page 21.
Crowell Mfg. Co., 177 Clifton Pl., Bklyn.
De Vilbiss Co., Toledo, O.
Electric Sprayit Co., 220 N. Broadway, Milwaukee, Wis.
Fairbanks-Morse & Co., 900 S. Wabash Ave., N.Y.
Foster Pump Works, 50 Washington St., Bklyn.
Ingersoll-Rand Co., 11 Broadway, N.Y.
Nash Engineering Co., South Norwalk, Conn.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
See page 48.
Worthington Pump & Machinery Corp., 115 Broadway, N.Y.

CONSULTANTS

Applied Research Laboratories, Dayton, N. J.
Columbus Labs., 33 N. State St., Chicago
Curtis & Tompkins, Ltd., 236 Front St., San Francisco, Cal.
Entomological Testing Labs., 114 E. 32nd St., N.Y.
Wm. Garrigue & Co., 9 S. Clinton St., Chicago
Lloyd A. Hall, 1415 W. 37th St., Chicago
Hochstadter Laboratories, Inc., 254 W. 31st St., N.Y.
See page 140.
Illinois Chemical Labs., 75 E. Wacker Drive., Chicago
La Wall & Harrison, 214 S. 12th St., Phila.
Alan Porter Lee, Inc., 136 Liberty St., N.Y.
See page 44.
Pease Laboratories, 39 W. 38th St., N.Y.
See page 140.
W. S. Purdy Co., 128 Water St., N.Y.
Samuel P. Sadtler & Son, 210 S. 13th St., Phila.
Seil, Putt & Rusby, 16 E. 34th St., N.Y.

CONSULTANTS (Cont'd)

Skinner & Sherman, 246 Stuart St., Boston **See page 140.**
Foster D. Snell, 305 Washington St., Brooklyn **See page 140.**
Stillwell & Gladding, 130 Cedar St., N.Y.
Taub Labs., 115 W. 68th St., N.Y.
Wurster & Sanger, 5201 Kenwood Ave., Chgo.

CONTAINERS, SHIPPING (see BOXES)

CONVEYORS

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
Bailey-Buruss Co., Atlanta, Ga.
H. W. Caldwell & Son Co., 2410 W. 18th St., Chicago
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Dow Co., 1025 Franklin St., Louisville, Ky.
Wm. Garrigue & Co., 9 S. Clinton St., Chicago
B. F. Gump Co., 431 S. Clinton St., Chicago
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
Jeffrey Mfg. Co., 924 N. 4th St., Columbus, O.
Karl Kiefer Machine Co., Cincinnati
Lancaster Iron Works, Lancaster, Pa.
Link-Belt Co., 910 S. Michigan, Chicago
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Pneumatic Scale Corp., Norfolk Downs, Mass. **See pages 52, 53.**
George G. Rodgers Co., 183 Varick St., N.Y.
Sprout Waldron & Co., Muncy, Pa.
Standard Conveyor Co., N. St. Paul, Minn.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Sterns Conveyor Co., Cleveland
F. J. Stokes Machine Co., Tabor Rd., Phila., Pa.

COPPER SULFATE (Blue Vitriol)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Dow Chemical Co., Midland, Mich., See page 26.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Faesy & Besthoff, Inc., 22 E. 40th St., N.Y.
General Chem. Co., 40 Rector St., N.Y. **See page 35.**
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Mechling Bros. Chemical Co., Camden, N. J.
Nichols Copper Co., 25 Broad St., N.Y.
Raritan Copper Wks., Perth Amboy, N. J.
E. M. Sergeant Co., 350—5th Ave., N.Y.
Tennessee Copper Co., 61 Broadway, N.Y.

CORKING MACHINERY

Karl Kiefer Machine Co., Cincinnati
Pneumatic Scale Corp., Norfolk Downs, Mass. **See pages 52, 53.**

CORKS

Armstrong Cork & Insulation Co., Lancaster, Pa.
Cork Import Corp., 330 W. 42nd St., N.Y.
Dodge Cork Co., Lancaster, Pa.

CORN OIL

(see also Brokers and Dealers)

American Maize Prods. Co., 100 E. 42nd St., N.Y.
Balfour, Guthrie & Co., Ltd., 67 Wall St., N.Y.
T G. Cooper & Co., 47 N. 2nd St., Phila.
Corn Products Refining Co., 17 Battery Pl., N.Y.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Early & Daniel Co., Ingalls Bldg., Cincinnati
Otto A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
Spencer Kellogg & Sons, Buffalo, N.Y.
J. H. Redding Co., 17 Battery Pl., N.Y.
Smith-Weihman Oil Co., 15 Moore St., N.Y. **See page 63.**
Snow Brokerage Co., 15 William St., N.Y. **See page facing 3rd cover.**
A. E. Staley Mfg. Co., Decatur, Ill.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N.Y. **See page 75.**
Woolner & Co., Peoria, Ill.

COSMETICS (Compacts, Lipsticks, etc.)

Amer. Perfumers Labs., 114 5th Ave., N.Y.
Ehrmann-Strauss Co., 200 W. Houston St., N.Y.
Luxor, Ltd., 1355 W. 31st St., Chicago
Oxzyn Co., 154—11th Ave., N.Y.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Julius Schmid, Inc., 423 W. 55th St., N.Y.
Shores Co., Cedar Rapids, Ia.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

COTTONSEED FATTY ACIDS (and Soapstock)

(see also Brokers and Dealers)

Armour Soap Wks., 1355 W. 31st St., Chicago **See page 12.**
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Otto A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
Spencer Kellogg & Sons, Buffalo, N.Y.
Portsmouth Cotton Oil Refining Co., Portsmouth, Va.
Procter & Gamble Co., Cincinnati, O.
J. H. Redding, Inc., 17 Battery Place, N.Y.
Snow Brokerage Co., 15 William St., N. Y. **See page facing 3rd cover.**
Southern Cotton Oil Co., Produce Exchange, N.Y.
Wecoline Products Co., 15 E. 26th St., N.Y.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilbur-Ellis Co., 17 Battery Place, N.Y. **See page 75.**
Wilson-Martin Co., Swanson St., Phila.
Woburn Degreasing Co., 1200 Harrison Ave., Harrison, N. J.

COTTONSEED OIL
(see also Brokers and Dealers)
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Otto A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
Spencer Kellogg & Sons, Buffalo, N.Y.
Los Angeles Soap Co., Los Angeles, Calif.
Portsmouth Cotton Oil Refining Corp., Portsmouth, Va.
Procter & Gamble Co., Cincinnati, O.
J. H. Redding Co., 17 Battery Pl., N.Y.
C. F. Simonin's Sons, Phila.
Snow Brokerage Co., 15 William St., N.Y. **See page facing 3rd cover.**
Southern Cotton Oil Co., Produce Exchange, N.Y.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N.Y. **See page 75.**

COUMARIN
(see also Aromatic Chemicals)
Dow Chemical Co., Midland, Mich. **See page 26.**
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page facing page 1.**
Maywood Chem. Wks., Maywood, N. J.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis

CREOSOTE OIL (see COAL TAR RAW MATERIALS)

CRESOL COMPOUND, U.S.P. and Technical (see DISINFECTANTS, COAL TAR)

CRESOLS (see COAL TAR RAW MATERIALS)

CRESYLIC ACID (see COAL TAR RAW MATERIALS)

CRUTCHERS
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Edge Moor Iron Wks., 30 Rockefeller Plaza, N.Y.
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
Huber Machine Co., 259—46th St., Brooklyn **See page 41.**
Littleford Bros., 443 E. Pearl St., Cincinnati
Newman Tallow & Soap Machinery Co., 1051 W. 35th St., Chicago **See page 48.**
Patterson Foundry & Machine Co., East Liverpool, Ohio
Ernest Scott & Co., P. O. Box 82, Fall River, Mass.
Sowers Mfg. Co., 1296 Niagara St., Buffalo, N.Y.
Struthers-Wells Co., Warren, Pa.

CUBÉ ROOT (see DERRIS PRODUCTS)

CUSPIDORS, Paper Mache
Almo Trading Co., 3 W. 18th St., N.Y.

CUTTING TABLES (see SOAP MACHINERY)

CYANIDES (see FUMIGANTS)

CYMENE
Brown Co., Portland, Me.
Industrial Chem. Sales Co., 230 Park Ave., N.Y.
Orbis Products Corp., 215 Peal St., N.Y. **See page 4.**

DEALERS (Chemicals)
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
American Oil & Supply Co., 236 Wilson Ave., Newark, N. J.
Baker & Gaffney, Drexel Bldg., Philadelphia
H. J. Baker & Bro., 271 Madison Ave., N.Y.
Barada & Page, Kansas City, Mo.
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
Benner Chemical Co., 298 S. La Salle St., Chicago
Braun-Knecht-Heimann Co., 584 Mission St., San Francisco
Buckeye Soda Products Co., 32 Main St., Cincinnati
Calo & Lydon, 90 West St., N.Y.
John A. Chew, 60 E. 42nd St., N.Y.
Consumers Chemical Co., Drexel Bldg., Philadelphia
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Dickerson Co., Drexel Bldg., Phila.
Doe & Ingalls, 198 Milk St., Boston
A. C. Drury & Co., 219 East North Water St., Chicago
Eaton Clark Co., 204 Woodward Ave., Detroit
Faesy & Besthoff, 22 E. 40th St., N.Y.
Alex C. Fergusson Co., Drexel Bldg., Phila.
Fort Pitt Chemical Co., 3134 Penn Ave., Pittsburgh
Frey & Horgan, 17 State St., N.Y.
General Drug Co., 170 Varick St., N.Y.
Otto A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Globe Chemical Co., Murray Road, Cinn.
Arnold Hoffman & Co., 55 Canal St., Providence, R. I.
Hummel Chemical Co., 90 West St., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
E. & F. King & Co., 405 Atlantic Ave., Boston
Los Angeles Chem. Co., 2200 Santa Fe Ave., Los Angeles
George Mann & Co., Providence, R. I.
Merchants Chemical Co.,
21 East 40th St., N.Y.
1314 South Canal St., Chicago
420 Barclay St., Milwaukee
110—6th St., N. E. Minneapolis
Millard-Heath Co., 214 Pine St., St. Louis
Clarence Morgan & Co., 355 W. Ontario St., Chicago

DEALERS (Chemicals) (Cont'd)

National Oil & Supply Co.,
170 Frelinghuysen Ave., Newark, N. J.
National Sales Co., 31 E. 13th St., Cinn.
Newman Tallow & Soap Machinery Co.,
1051 W. 35th St., Chicago **See page 48.**
Paper Makers Chemical Corp.,
Kalamazoo, Mich.
R. Peltz Co., 112 S. 16th St., Philadelphia
Pfaltz & Bauer, Inc., 350 5th Ave., N.Y.
H. B. Prior Co., 420 Lexington Ave., N.Y.
R. F. Revson Co., 91—7th Ave., N.Y.
James H. Rhodes & Co., 153 W. Hubbard St.,
Chicago
G. S. Robins & Co., 310 S. Commercial St.,
St. Louis
Rodgers Chemical Co., Fitzimmons Bldg.,
Pittsburgh
Rohm & Haas Co., Inc., 222 W. Washington
Sq., Phila. **See pages 60, 61.**
E. M. Sergeant Pulp & Chemical Co.,
350—5th Ave., N.Y.
H. J. Rolls Chemical Co., Buffalo, N.Y.
J. U. Starkweather Co., Providence, R. I.
Thompson-Hayward Chem. Co.,
2915 Southwestern Blvd., Kansas City
Arthur C. Trask Co., 4103 S. La Salle St.,
Chicago, Ill.
Jos Turner & Co., 630—5th Ave., N.Y.
See page 70.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.

DEALERS (Oils and Fats)

Balfour, Guthrie & Co., 67 Wall St., N.Y.
Calo & Lydon, 90 West St., N.Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Alex Fergusson Co., Drexel Bldg., Phila.
Frey & Horgan, 17 State St., N.Y.
Otto A. C. Hagen Co., 929 Public Ledger Bldg.,
Phila.
A. W. Harris Oil Co., Providence, R. I.
J. H. Hinz Co., 825 Engineers Bldg., Cleveland
Innes & Co., 533 Canal St., N.Y.
Miller & Co., 2401 Chestnut St., Philadelphia
Clarence Morgan & Co., 353 W. Ontario St.,
Chicago
Murray Oil Products Co., 21 West St., N.Y.
Newman Tallow & Soap Machinery Co.,
1051 W. 35th St., Chicago **See page 48.**
Rayner & Stonington, 79 Wall St., N.Y.
E. M. Sergeant Pulp & Chemical Co.,
Empire State Bldg., N.Y.
E. R. Smead Co., Hanna Bldg., Cleveland
Smith-Weihman Co., 15 Moore St., N.Y.
See page 63.
Swan & Finch Oil Co., 205 E. 42nd St., N.Y.
Arthur C. Trask Co., 4103 S. La Salle St.,
Chicago
Tunley & Co., 31 Water St., N.Y.
Welch, Holme & Clark Co., Inc.,
563 Greenwich St., N.Y.

DECOLORIZING CARBONS

American Active Carbon Co., Columbus, O.
Cliffs-Dow Chem. Co., Marquette, Mich.
Darco Sales Corp., 60 E. 42nd St., N.Y.
Durkee Famous Foods, Inc., 2670 Elston Ave.,
Chicago
Industrial Chem. Sales Co., Inc.,
230 Park Ave., N.Y.
L. A. Salomon & Bro., 216 Pearl St., N.Y.
Wishnick-Tumpeer, Inc., 295 Madison Ave.,
N.Y.

DEGRAS **(see WOOL GREASE)**

DEODORIZING BLOCK COLORS **(see COLORS)**

DEODORIZING BLOCK DIES **(see SOAP DIES)**

DEODORIZING BLOCK HOLDERS **(see HOLDERS, DEODORIZING BLOCKS)**

DEODORIZING BLOCK PERFUMES **(see PERFUMING COMPOUNDS)**

DEODORIZING BLOCK PRESSES **(see PRESSES)**

DEODORIZING BLOCKS AND CRYSTALS

Antiseptol Co., 5524 Northwest Highway,
Chicago
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co.,
2526 W. Congress St., Chicago
Churchilll Mfg. Co., 309 Douglas St.,
Sioux City, Ia.
Clifton Chem. Co., 247 Front St., N.Y.
See page 19.
Columbia Soap & Chem. Co., Inc.,
324 Leavenworth St., San Francisco
Crystal Labs., Inc., 21 W. Park Way, N. E.,
Pittsburgh, Pa.
Davies-Young Soap Co., Dayton, O.
See page 23.
Delta Chemical Co., 1815 Riverside Drive, N.Y.
Eagle Soap Corp., Huntington, Ind.,
See page 28.
Fuld Bros., 702 S. Wolfe St., Baltimore
See page 33.
Globe Sanitary Supply Co., 2249 E. 38th St.,
Los Angeles
Goulard & Olena, 140 Liberty St., N.Y.
Hockwald Chemical Co., 30 Bluxome St.,
San Francisco
Hubman Supply Co., 225 N. 4th St.,
Columbus, O.
Industrial Labs., 17-19 W. Conway St.,
Baltimore
Jansen Soap & Chemical Co., 324 Leavenworth
St., San Francisco, Cal.
Kemiko Mfg. Co., 500 Chancellor Ave.,
Irvington, N. J.
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
See page 2.
La Maison Prods. Inc., So. York St.,
Brooklyn, N.Y.
Marshall Products, Inc., 806 N. 1st St.,
St. Louis
Maywood Pest Exterminators, 1206 S. 1st Ave.,
Maywood, Ill.
New York Soap Corp., 294 Pearl St., N.Y.
See page 47.

DEODORIZING BLOCKS AND CRYSTALS (Cont'd)

North Coast Soap & Chem. Wks., Seattle, Wash.
Palmer Products Inc., Waukesha, Wis.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Puritan Chemical Co., Atlanta, Ga.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Selig Co., 336 Marietta St., Atlanta, Ga.
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
Uncle Sam Chemical Co., 329 E. 29th St., N.Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
White Tar Co., Kearny, N. J. **See page 2.**

DEODORIZING AND BLEACHING EQUIPMENT (For Oils)

Edouard Bataille, 350—5th Ave., N.Y.
Albert H. Bruecke, 30 Rockefeller Plaza, N.Y. **See page 18.**
Wm. Garrigue & Co., 9 S. Clinton St., Chgo.
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
Alan Porter Lee, Inc., 136 Liberty St., N.Y. **See page 44.**
Pfaudler Co., 89 East Ave., Rochester, N.Y.
Ernest Scott & Co., Fall River, Mass.
F. J. Stokes Machine Co., 5974 E. Tabor Rd., Phila.
Wurster & Sanger, 5201 Kenwood Ave., Chgo.

DERRIS PRODUCTS

Derris, Inc., 79 Wall St., N.Y. **See page 24.**
Hammond Paint & Chem. Co., Beacon, N.Y.
J. L. Hopkins & Co., 220 Broadway, N.Y.
McCormick & Co., Baltimore, Md. **See page 76.**
Murray & Nickell Mfg. Co., 2608 Arthington St., Chicago
Orbis Products Corp., 215 Pearl St., N.Y. **See page 4.**
S. B. Penick & Co., 132 Nassau St., N.Y. **See page 51.**
John Powell & Co., 114 E. 32nd St., N.Y. **See pages 54, 55.**
R. J. Prentiss & Co., 100 Gold St., N.Y. **See page 56.**
Frank B. Ross Co., 79 Wall St., N.Y.

DIES (see SOAP DIES)

DIETHANOLAMINE (see ETHANOLAMINE)

DIFFUSERS (Steam and Air)

Fumeral Co., Racine, Wisc. **See page 34.**

DIP OIL (see COAL TAR RAW MATERIALS)

DIPHENYL OXIDE (see AROMATIC CHEMICALS)

DISH WASHING COMPOUNDS (see CLEANING COMPOUNDS)

DISH WASHING COMPOUND DISPENSERS

Mathieson Alkali Wks., 60 E. 42nd St., N.Y. (Cakes)
V. C. Products Co., Philadelphia (Powders)

DISINFECTANTS, CHLORINATED

Baird & McGuire, Inc., Holbrook, Mass. **See page 14, 15.**
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Churchilll Mfg. Co., 309 Douglas St., Sioux City, Ia.
Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Eagle Soap Corp., Huntington, Ind., **See page 28.**
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
Globe Sanitary Supply Co., 2249 E. 38th St., Los Angeles
James Good, Inc., Kensington, Phila. **See page 38.**
Goulard & Olena, Inc., 140 Liberty St., N.Y.
Hockwald Chem. Co., 30 Bluxome St., San Francisco, Cal.
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Mathieson Alkali Works, 60 E. 42nd St., N.Y.
McLaughlin Gormley King Co., Minneapolis, Minn.
Merck & Co., Rahway, N. J.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
Niagara Alkali Co., 9 E. 41st St., N.Y. **See page 49.**
North Coast Soap & Chem. Works, Seattle, Wash.
Peck's Products Co., St. Louis, Mo.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sherwin-Williams Co., 601 Canal Rd., Cleveland
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

DISINFECTANTS, COAL TAR AND PINE OIL

An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Cal.
Baird & McGuire, Inc., Holbrook, Mass. **See pages 14, 15.**
Samuel Cabot, Inc., 141 Milk St., Boston
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**

DISINFECTANTS, COAL TAR and PINE OIL (Cont'd)

Wm. Cooper & Nephews, 1909 Clifton Ave., Chicago
Creco Co., Inc., Creco Bldg., Long Island City, N.Y.
Davies-Young Soap Co., Dayton, O. **See page 23.**
Delta Chemical Co., 1815 Riverside Drive, N.Y.
Eagle Soap Corp., Huntington, Ind., **See page 28.**
Fergusson Laboratories, Drexel Bldg., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
Globe Sanitary Supply Co., 2249 E. 38th St., Los Angeles
James Good, Inc., Kensington, Phila. **See page 38.**
Goulard & Olena, 140 Liberty St., N.Y.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Harley Soap Co., 2832 E. Pacific St., Phila.
Hockwald Chem. Co., 30 Bluxome St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hunt Mfg. Co., Lisbon Rd., Cleveland
William E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
Koppers Co., Koppers Bldg., Pittsburgh, Pa. **See page 2.**
La Maison Prods. Inc., So. York St., Brooklyn, N.Y.
McLaughlin Gormley King Co., 1715 Fifth St., S. E., Minneapolis, Minn.
Merck & Co., Rahway, N. J.
New York Soap Corp., 294 Pearl St., N.Y. **See page 47.**
Peck's Products Co., St. Louis, Mo.
Perrow Chem. Co., Hurt, Va.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sherwin-Williams Co., 601 Canal Rd., Cleveland, Ohio
Shores Co., Cedar Rapids, Ia.
Thompson Hayward Chem. Co., Des Moines
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
Uncle Sam Chemical Co., 329 E. 29th St., N.Y.
Vliet & Co., 638 Monroe St., Brooklyn
West Disinfecting Co., Long Island City, N.Y.
White Tar Co., Kearny, N. J. **See page 2.**

DISINFECTANTS, COEFFICIENT TESTS **(see CONSULTANTS)**

DISPENSERS, Liquid Soap **(see SOAP DISPENSERS)**

DISSEMINATORS, PERFUME **(see PERFUME DISSEMINATORS)**

DOG REPELLENTS

Acme White Lead Co., Detroit
Hammond Paint & Chem. Co., Beacon, N.Y.

DRAIN PIPE SOLVENT

Antiseptol Co., 5524 Northwest Highway, Chicago
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Churchill Mfg. Co., 309 Douglas St., Sioux City, Ia.
Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Creco Co., Inc., Creco Bldg., Long Island City, N.Y.
Eagle Soap Corp., Huntington, Ind., **See page 28.**
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
James Good, Inc., Kensington, Phila. **See page 38.**
Goulard & Olena, Inc., 140 Liberty St., N.Y.
Hockwald Chem. Co., 30 Bluxome St., San Francisco
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hull Co., 305 Washington St., Brooklyn
Industrial Labs., 17-19 W. Conway St., Baltimore
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Mechling Bros. Chemical Co., Line St. & Coopers Creek, Camden, N.J.
North Coast Chem. & Soap Wks., Seattle, Wash.
Palmer Products, Inc., Waukesha, Wis.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
John Sunshine Chem. Co., 604 W. Lake St., Chicago
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

DRIP MACHINES

Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Eagle Soap Corp., Huntington, Ind. **See page 28.**
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
Garnet Chem. Corp., 911 N. Lumber St., Allentown, Pa.
Hockwald Chem. Co., 30 Bluxome St., San Francisco
Palmer Prods. Inc., Waukesha, Wis.
Rochester Germicide Co., 16 Dowling Pl., Rochester, N.Y.
Wilson & Bennett Mfg. Co., 6532 S. Menard Ave., Chicago

DRUM FILLING MACHINERY **(see FILLING MACHINERY, DRUMS)**

DRUM WASHERS **(see WASHING MACHINERY, DRUMS)**

DRUMS **(see BARRELS)**

DRY CLEANING SOAPS

Armour Soap Wks., 1355 W. 31st St., Chicago **See page 12.**

DRY CLEANING SOAPS (Cont'd)

Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Beltine Chem. & Mfg. Co., 6155 Wentworth Ave., Chicago
Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Davies Young Soap Co., Dayton, O. **See page 23.**
Eagle Soap Corp., Huntington, Ind. **See page 28.**
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Foree Prods. Co., Chicago
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
Harley Soap Co., 2832 E. Pacific St., Phila.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Midland Chem. Labs., Dubuque, Ia.
National Oil Products Co., Harrison, N. J.
North Coast Chem. & Soap Wks., Seattle, Wash.
Peck's Products Co., St. Louis, Mo.
Riverside Mfg. Co., 4919 Conn St., St. Louis
John T. Stanley Co., 642 W. 30th St., N.Y. **See page 67.**
Ultra Chem. Wks., Inc., Kitay Bldg., Paterson, N. J.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., Cincinnati, O.

DRYERS, CHIP SOAP and BARS

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
Huber Machine Co., 259—46th St., Brooklyn **See page 41.**
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Proctor & Schwartz, 7th St. & Tabor Rd., Philadelphia **See page 57.**
C. G. Sargent's Sons, Graniteville, Mass. **See page 62.**

DRYING MACHINERY (General)

C. O. Bartlett & Snow Co., Cleveland
Buck Dryer Corp., Manchester, Conn.
Buckeye Dryer Co., 131 W. Lake St., Chicago
Buffalo Forge Co., 490 Broadway, Buffalo, N.Y.
Buffalo Foundry & Machine Co., Buffalo, N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Drying Systems, Inc., 1800 Foster Ave., Chicago
Ellis Dryer Co., Roosevelt Road & Talman Ave., Chicago
Edge Moor Iron Wks., 30 Rockefeller Plaza, N.Y.
Gordon Davis Engineering Co., 21 E. 40th St., N.Y.
B. F. Gump Co., 431 S. Clinton St., Chicago
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
Lancaster Iron Works, Lancaster, Pa.
J. M. Lehmann Co., 248 W. Broadway, N.Y.
Louisville Drying Equipment Co., Louisville, Ky.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Oven Equipment Co., New Haven, Conn.
Philadelphia Drying Mach. Co., Philadelphia
Proctor & Schwartz, 7th St. & Tabor Rd., Philadelphia **See page 57.**
C. G. Sargent's Sons Corp., Graniteville, Mass. **See page 62.**
Ernest Scott & Co., Fall River, Mass.
F. J. Stokes Machine Co., Philadelphia, Pa.
Struthers-Wells Co., Warren, Pa.
B. F. Sturtevant Co., Hyde Park, Boston

DUST PANS

A. Kreamer, Inc., 307 Kent Ave., Brooklyn
F. H. Lawson Co., Cincinnati
White Mop Wringer Co., Fultonville, N.Y.

DUSTERS

Hoag Duster Co., 200 Church St., N.Y.
Schuman P. R. Duster Co., 65 E. 53rd St., Brooklyn
Tu-Way Products Co., 445 W. Jefferson Ave., Detroit, Mich.
P. Wohl & Sons, 85 Bayard St., N.Y.

EMULSIFYING AGENTS

American Chemical Paint Co., Ambler, Pa.
American Colloid Co., 363 W. Superior St., Chicago
Arabol Mfg. Co., 110 E. 42nd St., N.Y.
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Hull Co., 305 Washington St., Bklyn.
Industrial Chem. Sales Co., 230 Park Ave., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
National Oil Products Co., Harrison, N. J.
Natural Products Co., 307 W. 8th St., Los Angeles
Orbis Products Corp., 215 Pearl St., N.Y. **See page 4.**
Pylam Products Co., 799 Greenwich St., N.Y. **See page 58.**
Richards Chem. Works, 190 Warren St., Jersey City, N.J.
Sandoz Chemical Works, Inc., 61 Van Dam St. N.Y.
A. E. Starkie Co., 1645 S. Kilburn Ave., Chicago **See page 68.**
Jacques Wolfe & Co., Passaic, N.J.

EMULSIFYING EQUIPMENT (see HOMOGENIZERS

ESSENTIAL OILS

van Ameringen-Haebler, Inc., 315—4th Ave., N.Y. **See pages 10, 11.**
Aromatic Products, Inc., 15 E. 30th St., N.Y. **See page 12.**
Arthur Bennett, Inc., 109 W. Austin Ave., Chicago

ESSENTIAL OILS (Cont'd)

W. J. Bush & Co., 11 E. 38th St., N.Y.
Ph. Chaleyer, Inc., 160 E. 56th St. N.Y.
Antoine Chiris Co., 147 Waverly Pl., N.Y.
Compagnie Duval, 121 E. 24th St., N.Y.
Compagnie Parento, Inc.,
Croton-on-Hudson, N.Y.
Cox, Aspden & Fletcher, 39 Cortlandt St., N.Y.
Dodge & Olcott Co., 180 Varick St., N.Y.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago, Ill.
Ehrmann-Strauss Co., 200 W. Houston St., N.Y.
Felton Chemical Co., 603 Johnson Ave., Brooklyn **See page 31.**
Firmenich & Co., 135 5th Ave., N.Y.
Chas. Fischbeck Co., 119 W. 19th St., N. Y. **See page 32.**
Florasynth Laboratories, 1513 Olmstead Ave., Bronx, N.Y.
Benj. French, Inc., 160—5th Ave., N.Y.
Fritzsche Brothers, Inc., 76 Ninth Ave., N.Y.
General Drug Co., 170 Varick St., N.Y.
Givaudan-Delawanna, Inc., 80—5th Ave., N.Y. **See inside front cover, 37.**
James B. Horner, Inc., 3 Platt St., N.Y.
Chas. L. Huisking & Co., 155 Varick St., N.Y.
Hymes Bros. Co., 37 Howard St., N.Y.
Industrial Organics, 151 W. 25th St., N.Y.
Lautier Fils, 158 W. 18th St., N.Y.
Leghorn Trading Co., 155 E. 44th St., N.Y. **See Page 45.**
Pierre Lemoine, Inc., 62 Watts St., N.Y.
Geo. Lueders & Co., 427 Washington St., N.Y.
Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
J. Manheimer, 10 Greene St., N.Y.
A. Maschmeijer, Jr., Inc., 43 W. 16th St., N.Y.
Hijos de Francisco Navarro,
119 Nassau St., N.Y.
Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago
Norda Essential Oil & Chem. Co., 601 W. 26th St., N.Y.
Ordis Products Corp., 215 Pearl St., N.Y. **See page 4.**
Pfaltz & Bauer, Inc., 350 5th Ave., N.Y.
Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.
Riviera Products Co., 215 W. Ohio St., Chicago
H. C. Ryland, Inc., 161 Water St., N.Y.
Schimmel & Co., 601 W. 26th St., N.Y.
Edwin Seebach Co., 912 Broadway, N.Y.
Wm. G. Sibbach & Co., 201 S. 2nd Ave., Maywood, Ill.
Geo. Silver Import Co., 353—4th Ave., N.Y.
Standard Aromatics, Inc.,
Bush Terminal Bldg. #1, Bklyn., N.Y.
Synfleur Scientific Labs., Monticello, N.Y.
A. M. Todd Co., Kalamazoo, Mich.
Ungerer & Co., 13 W. 20th St., N.Y. **See page facing inside front cover, 71.**
Albert Verley, Inc., 11 E. Austin Ave., Chicago **See page 72.**

ETHANOLAMINE

Carbide & Carbon Chemicals Corp.,
30 E. 42nd St., N.Y.

ETHER

American Solvents & Chem. Corp.,
230 Park Ave., N.Y.
Carbide & Carbon Chemicals Corp.,
30 E. 42nd St., N.Y.
Chas. Cooper & Co., 194 Worth St., N.Y.
Mallinckrodt Chem. Wks., 3600 N. 2nd St., St. Louis
Merck & Co., Rahway, N. J. (also Petroleum)
Skelly Oil Co., 121 W. Wacker Dr., Chicago (Petroleum)
U. S. Industrial Chem. Co.,
60 E. 42nd St., N.Y.

ETHYLENE DICHLORIDE **(see SOLVENTS, ORGANIC)**

EUCALYPTUS OIL **(see ESSENTIAL OILS)**

EVAPORATORS

E. B. Badger & Sons Co., 75 Pitt St., Boston
Buffalo Fndry. & Mach. Co., Buffalo, N.Y.
Chemical Equipment Co., Montpelier, Ind.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Edge Moor Iron Wks., 30 Rockefeller Plaza, N.Y.
William Garrigue & Co., 9 S. Clinton St., Chicago
Kestner Evaporator Co.,
18th St. & Allegheny Ave., Philadelphia
Lancaster Iron Works, Lancaster, Pa.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Ernest Scott & Co., Fall River, Mass.
F. J. Stokes Machine Co., Phila., Pa.
Struthers-Wells Titusville Corp., Warren, Pa.
Swenson Evaporator Co., Harvey, Ill.
Wurster & Sanger, 5201 Kenwood Ave., Chicago
Zaremba Co., 506 Crosby Bldg., Buffalo, N. Y.

FANS (Ventilating & Exhaust)

Buffalo Forge Co., 490 Broadway, Buffalo
Duriron Co., Dayton, O.
Garden City Fan Co., McCormick Bldg., Chgo.
General Regulator Corp., 2608 Arthington St., Chicago
Graybar Electric Co., 180 Varick St., N. Y.

FAT SPLITTING REAGENTS

Twitchell Process Co., St. Bernard, Ohio

FATTY ACID PLANTS

Albert H. Bruecke, 30 Rockefeller Plaza, N. Y. **See page 18.**
William Garrigue & Co., 9 S. Clinton St., Chicago
Alan Porter Lee, Inc., 136 Liberty St., N. Y. **See page 44.**
Ernest Scott & Co., Fall River, Mass.
Wurster & Sanger, 5201 Kenwood Ave., Chicago

FATTY ACIDS

(see also Brokers and Dealers)

Armour Soap Wks., 1355 W. 31st St., Chicago **See page 12.**

FATTY ACIDS (Cont'd)

Celina Stearic Acid Co., Celina, Ohio
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Darling & Co., 4201 So. Ashland Ave., Chicago
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
A. Gross & Co., 122 E. 42nd St., N.Y.
Otto A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
Industrial Chem. Sales Co., Inc., 230 Park Ave., N.Y.
Spencer Kellogg & Sons, Buffalo, N.Y.
Leghorn Trading Co., 155 E. 44th St., N.Y. **See page 45.**
Los Angeles Soap Co., Los Angeles, Calif.
National Oil Products Co., Harrison, N. J.
Procter & Gamble Co., Cincinnati, O.
Silmo Chemical Co., Vineland, N.J.
C. F. Simonin's Sons, Tioga & Belgrade Sts., Phila.
Snow Brokerage Co., 15 William St., N.Y. **See page facing 3rd cover.**
Southern Cotton Oil Co., Produce Exchange, N.Y.
A. E. Starkie Co., 1645 S. Kilburn Ave., Chicago **See page 68.**
Swift & Co., Union Stock Yards, Chicago
Theobald Animal By-Products Refinery, Kearny, N.J.
Twitchell Process Co., Ivorydale, Ohio
Wecoline Products, Inc., 15 E. 26th St., N.Y.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
M. Werk Co., St. Bernard, Cincinnati
Wilbur-Ellis Co., 17 Battery Pl., N.Y. **See page 75.**
Wilson-Martin Co., Swanson St., Phila.
Woburn Degreasing Co., 1200 Harrison Ave., Harrison, N. J.

FATTY ALCOHOLS, Sulfonated, see SULFONATED FATTY ALCOHOLS

FATTY ALCOHOLS

E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Michel Export Co., 95 Broad St., N.Y.

FELDSPAR (see ABRASIVES AND FILLERS)

FIBRE CASES (see BOXES, FIBRE)

FIBRE CANS (see CANS, FIBRE)

FILLERS, see TALC, BENTONITE, CLAYS, ETC.

FILLING MACHINERY (Flakes)

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. L. Ferguson Co., Joliet, Ill.
B. F. Gump Co., 431 S. Clinton St., Chicago. (Bbls. & Bags)
S. Howes Co., Silver Creek, N.Y. (Bbls.)
Johnson Automatic Sealer Co., Ltd. Battle Creek, Mich.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Pneumatic Scale Corp., Norfolk Downs, Mass. **See pages 52, 53.**
Stokes & Smith Co., 4915 Summerdale Ave., Philadelphia **See page 69.**
Triangle Package Machinery Co., 906 N. Spaulding Ave., Chicago

FILLING MACHINERY (Liquids, Bottles)

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Ertel Engineering Corp., 120 E. 16th St., N.Y. **See page 29.**
Karl Kiefer Machine Co., Cincinnati
Newman Tallow & Soap Machy. Co., 1052 W. 35th St., Chicago **See page 48.**
Pneumatic Scale Corp., Norfolk Downs, Mass. **See pages 52, 53.**
Scientific Filter Co., 1 Franklin Sq., N.Y.
U. S. Bottlers Machinery Co., 4025 N. Rockwell St., Chicago
Vol-U-Meter Co., 707 Ohio St., Buffalo

FILLING MACHINERY (Liquids, Cans)

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
S. F. Bowser & Co., 1300 E. Creighton Ave., Ft. Wayne, Ind.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Horix Mfg. Co., Corliss Station, Pittsburgh
Karl Kiefer Machine Co., Cincinnati
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago **See page 48.**
Pneumatic Scale Corp., Norfolk Downs, Mass. **See pages 52, 53.**
Scientific Filter Co., 1 Franklin Sq., N.Y.
F. J. Stokes Machine Co., Tabor Rd., Philadelphia
U. S. Bottlers Machinery Co., 4025 N. Rockwell St., Chicago
The Vol-U-Meter Co., 707 Ohio St., Buffalo, N.Y.

FILLING MACHINERY (Liquids, Drums)

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
S. F. Bowser & Co., 1300 E. Creighton Ave., Ft. Wayne, Ind.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
National Acme Co., E. 131st St. & Coit Ave., Cleveland
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago **See page 48.**
Scientific Filter Co., 1 Franklin Sq., N.Y.
The Vol-U-Meter Co., 707 Ohio St., Buffalo, N.Y.

FILLING MACHINERY (Pastes, Cans)

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**

FILLING MACHINERY (Pastes, Cans) (Cont'd)

J. L. Ferguson Co., Joliet, Ill.
Filler Machine Co., 1250 E. Montgomery St., Philadelphia
Karl Kiefer Machine Co., Cincinnati
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago **See page 48.**
Progressive Eng. Co., Torresdale, Pa.
Scientific Filter Co., 1 Franklin Sq., N.Y.
C. T. Small Mfg. Co., 1204 Ferguson Ave., St. Louis, Mo.
Sprague-Sells Corp., 308 W. Washington St., Chicago
Stokes & Smith Co., 4915 Summerdale Ave., Phila. **See page 69.**
F. J. Stokes Mach. Co., 5974 E. Tabor Rd., Philadelphia
Triangle Package Mchy. Co., 910 N. Spaulding Ave., Chicago
Vol-U-Meter Co., 707 Ohio St., Buffalo, N.Y.

FILLING MACHINERY (Pastes, Drums)

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Newman Tallow & Soap Machy. Co., **See page 48.**
Stokes & Smith Co., 4915 Summerdale Ave., Phila. **See page 69.**

FILLING MACHINERY (Pastes, Tubes)

Arthur Colton Co., Detroit, Mich.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Karl Kiefer Machine Co., Cincinnati
F. J. Stokes Mach. Co., 5974 E. Tabor Rd., Philadelphia

FILLING MACHINERY (Powders)

Consolidated Package Machinery Corp., 1400 West Ave., Buffalo, N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. H. Day Co., 1144 Harrison Ave., Cincinnati
J. L. Ferguson Co., Joliet, Ill.
B. F. Gump Co., 431 S. Clinton St., Chicago
S. Howes Co., Silver Creek, N.Y. (Bbls.)
Johnson Automatic Sealer Co., Battle Creek, Mich.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Pneumatic Scale Corp., Norfolk Downs, Mass. **See pages 52, 53.**
F. B. Redington Co., 112 S. Sangamon St., Chicago
C. T. Small Development Co., 212 S. 7th St., St. Louis
Stokes & Smith Co., 4915 Summerdale Ave., Phila. **See page 69.**
F. J. Stokes Mach. Co., 5974 E. Tabor Rd., Philadelphia
Triangle Package Machinery Co., 906 N. Spaulding Ave., Chicago

FILTER CLOTHS

Abbott Associates, 417 Park Sq. Bldg., Boston
Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
Cleveland Wire Cloth & Mfg. Co., 3574 E. 78th St., Cleveland
B. F. Gump Co., 431 S. Clinton St., Chicago
Wm. E. Hooper & Sons Co., Juniper & Cherry Sts., Philadelphia
Independent Filter Press Co., 189—7th St., Brooklyn
National Filter & Cloth Weaving Co., 220 E. 42nd St., N.Y.
Newark Wire Cloth Co., 223 Verona Ave., Newark, N. J.
Oliver United Filters, Inc., 33 W. 42nd St., N.Y.
J. T. Perkins Co., 669 Kent Ave., Brooklyn
Wm. R. Perrin & Co., 349 W. 23rd St., Chicago
T. Shriver & Co., Harrison, N. J.
D. R. Sperry & Co., Batavia, Ill.

FILTER PAPER

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
H. Reeve Angel & Co., 7 Spruce St., N.Y.
Aromatic Products, Inc., 15 E. 30th St., N.Y. **See page 13.**
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago Ill.
August Giese & Son, 121 E. 24th St., N.Y.
Karl Kiefer Machine Co., Cincinnati, O.
Geo. Lueders & Co., 427 Washington St., N.Y.
Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
Neumann-Buslee & Wolfe, Inc., 224 W. Huron St., Chicago
Orbis Products Corp., 215 Pearl St., N.Y. **See page 4.**
Palo Co., 81 Reade St., N.Y.
Scientific Filter Co., 1 Franklin Sq., N.Y.

FILTER PRESSES

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Ertel Engineering Corp., 120 E. 16th St., N.Y. **See page 29.**
Independent Filter Press Co., 189—7th St., Brooklyn
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Oliver United Filters, Inc., 33 W. 42nd St., N.Y.
Patterson Foundry & Machine Co., East Liverpool, Ohio
Wm. R. Perrin & Co., 349 W. 23rd St., Chicago
Scientific Filter Co., 1 Franklin Sq., N.Y.
T. Shriver & Co., Harrison, N. J.
D. R. Sperry & Co., Batavia, Ill.
United Filters Corp., Hazelton, Pa.

FILTERS (Special)

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
S. F. Bowser & Co., 1300 E. Creighton Ave., Ft. Wayne, Ind.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**

FILTERS (Special) (Cont'd)

Ertel Engineering Corp., 120 E. 16th St., N.Y. **See page 29.**
Foster Pump Wks., Inc., 54 Washington St., Brooklyn
Jacob House & Sons, 52 St. Paul St., Buffalo
Karl Kiefer Machine Co., Cincinnati
Lancaster Iron Works, Lancaster, Pa.
Mixing Equipment Co., 1024 Garson Ave., Rochester, N.Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago **See page 48.**
Oliver United Filters, Inc., 33 W. 42nd St., N.Y.
Permutit Co., 330 W. 42nd St., N.Y.
Scientific Filter Co., 1 Franklin Sq., N.Y.
T. Shriver & Co., Harrison, N. J.
U. S. Bottlers Mchy. Co., 4015 N. Rockwell St., Chicago
Whiting Corp., Harvey, Ill.

FIRE EXTINGUISHER FLUID **(see CARBON TETRACHLORIDE)**

FIRE-PROOFING COMPOUNDS

Monsanto Chemical Co., 1724 South Second St., St. Louis
Niacet Chemicals Corp., Niagara Falls, N.Y.
Price Fire & Water Proofing Co., Poughkeepsie, N.Y.
Protexol Corp., 32 Market St., Kenilworth, N. J.
Victor Chemical Works, 141 West Jackson Bldv., Chicago

FISH OILS

(see also Brokers and Dealers)

Atlantic Products Corp., Commercial Trust Bldg., Phila.
Atlas Refinery, Lockwood St., Newark, N. J.
Cook Swan Co., 233 Bway., N.Y.
Falk & Co., Pittsburgh
Harvey & Outerbridge, 250 Park Ave., N.Y.
Murray Oil Products Co., 21 West St., N. Y.
National Oil Prods. Co., Harrison, N.J.
Pacific Vegetable Oil Co., 82 Thompson St., San Francisco
Swan Finch Oil Corp., 205 E. 42nd St., N.Y.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Southern Menhaden Corp., 350 Madison Ave., N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N. Y. **See page 75.**

FISH OIL SOAPS

James Good, Inc., Kensington, Philadelphia **See page 38.**
National Oil Products Co., Harrison, N. J.
Newell Gutradt Co., 350 Fremont St., San Francisco, Cal.
North Coast Chem. & Soap Works, Seattle, Wash.
Peck's Products Co., St. Louis Mo.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Silmo Chemical Co., Vineland, N.J.
Werner G. Smith Co., 2191 W. 110th St., Cleveland

FIXATIVES, PERFUME **(See ESSENTIAL OILS)**

FLAKE SOAPS **(see CHIP SOAPS)**

FLOATING SOAPS

Colgate-Palmolive-Peet Co., Jersey City, N. J.
J. Eavenson & Sons, Camden, N. J.
Hewitt Soap Co., Dayton, Ohio
Iowa Soap Co., Burlington, Iowa
Procter & Gamble Co., Cincinnati
Geo. A. Schmidt & Co., 236 W. North Ave., Chicago
Lightfoot Schultz Co., 389—5th Ave., N.Y.
John T. Stanley Co., 642 W. 30th St., N.Y. **See page 67.**
M. Werk Co., Cincinnati, O.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

FLOOR FINISHES (Non-Wax)

Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Davies-Young Soap Co., Dayton, O. **See page 23.**
Eagle Soap Corp., Huntington, Ind. **See page 28.**
Federal Varnish Co., 337 S. Peoria St., Chicago **See page 30.**
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
T. F. Washburn Co., 2244 Elston Ave., Chicago **See page 74.**

FLOOR MACHINES

Amer. Floor Surfacing Mach. Co., Toledo, O.
Churchill Mfg. Co., 309 Douglas St., Sioux City, Ia.
Fay Co., 130 Madison Ave., N.Y.
Finnell System, Inc., Elkhart, Ind.
General Floor Craft Corp., 333 6th Ave., N.Y.
Hild Floor Machine Co., 108 W. Lake St., Chicago
Kent Co., Rome, N.Y.
S. C. Lawlor Co., 122 N. Curtis St., Chicago
Lincoln-Schlueter Floor Machy. Co., 220 W. Grand Ave., Chicago
Ponsell Floor Machine Co., 220 W. 19th St., N.Y.

FLOOR SCRAPERS

A. F. Dormeyer Mfg. Co., 2640 Greenwich Ave., Chicago
Greenview Mfg. Co., 2557 Greenview Ave., Chicago
Lincoln-Schlueter Floor Machy. Co., 220 W. Grand Ave., Chicago
White Mop Wringer Co., Fultonville, N.Y.

FLOOR SEAL **(see GYM-FINISH)**

FLOOR WAXES

American Wax Co., 1325 128th St., College Point, L. I.
Baums Castorine Co., 200 Mathew St., Rome, N. Y.

FLOOR WAXES (Cont'd)

Buckingham Wax Corp., Van Dam St. & Borden Ave., L. I. City, N.Y.
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Churchill Mfg. Co., 309 Douglas St., Sioux City, Ia.
Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Davies-Young Soap Co., Dayton, O. **See page 23.**
Federal Varnish Co., 337 S. Peoria St., **See page 30.**
Franklin Research Co., 5134 Lancaster Ave., Philadelphia
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
Hockwald Chem. Co., 30 Bluxome St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hunt Mfg. Co., Lisbon Rd., Cleveland
International Metal Polish Co., Twill St., & Belt Ry., Indianapolis
E. B. Moore & Co., 185 N. Wabash Ave., Chicago
Paimer Products, Inc., Waukesha, Wis.
Perrow Chemical Co., Hunt, Va.
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
H. F. Staples Co., Medord, Mass.
Uncle Sam Chemical Co., 329 E. 29th St., N.Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
T. F. Washburn Co., 2244 Elston Ave., Chicago **See page 74.**
Windsor Wax Co., Inc., 53 Park Pl., N.Y.

FLOTATION OILS

Barrett Co., 40 Rector St., N.Y. **See page 16.**
Cliffs Dow Chemical Co., Marquette, Mich.
General Naval Stores Co., 230 Park Ave., N.Y.
Hardwood Chemical Co., 2 Jersey St., Buffalo, N.Y.
Hercules Powder Co., Wilmington
Koppers Co., Koppers Bldg., Pittsburgh **See page 2.**
National Aniline & Chemical Co., 40 Rector St., N.Y.
Reilly Tar & Chemical Corp., Indianapolis, Ind. **See page 59.**
Tennessee Eastman Corp., Kingsport, Tenn.

FLOUORIDES

(See also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
American Fluoride Corp., 151 W. 19th St., N.Y.
General Chemical Co., 40 Rector St., N.Y. **See page 35.**
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Merck & Co., Rahway, N. J.
Pfaltz & Bauer, 350 5th Ave., N.Y.
Wiarda & Hall Acid Wks., 514 Gardner Ave., Brooklyn, N.Y.

FLY SPRAYS (see HOUSEHOLD INSECTICIDE SPRAYS)

FOAMING AGENTS (see SAPONIN)

FORMALDEHYDE

(see also Brokers and Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Cliffs-Dow Chem. Co., Marquette, Mich.
Delta Chem. & Iron Co., Wells, Mich.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Wm. S. Gray Co., 342 Madison Ave., N.Y.
Heyden Chem. Co., 50 Union Sq., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Mallinckrodt Chemical Work, St. Louis, Mo.
Merck & Co., Rahway, N. J.

FORMALDEHYDE CANDLES

Bauer & Black, Chicago
Depree Chem. Co., Holland, Mich.

FOSSIL FLOUR (see ABRASIVES)

FRAMES (Soap)

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
Huber Machine Co., 259 46th St., Brooklyn **See page 41.**
Littleford Bros., 451 E. Pearl St., Cincinnati
Newman Tallow & Soap Mach. Co., 1051 W. 35th St., Chicago (New & Used) **See page 48.**

FULLERS EARTH

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
Chas. B. Chrystal Co., 11 Park Pl., N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Fullers Earth Co., 2049 E. 100th St., Cleveland
Hammill & Gillespie, 225 Broadway, N.Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Industrial Chem. Sales Co., Inc., 230 Park Ave., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jas. H. Rhodes & Co., 48-02 29th St., L. I. City, N.Y.
L. A. Salomon & Bro., 216 Pearl St., N.Y.
Tamms Silica Co., 228 N. La Salle St., Chgo.
Whittaker, Clark & Daniels, 260 Broadway, N.Y.

FUMIGANTS (Cyanide, etc.)

American-British Chem. Supplies, Inc., 180 Madison Ave., N.Y. **See page 9.**
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Calcyanide Co., Box 307, Grand Central Annex, N.Y.
Carbide & Carbon Chemicals Corp., 30 East 42nd St., N.Y.
Dow Chemical Co., Midland, Mich. **See page 26.**
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Exterminating Materials Co., 712 Amsterdam Ave., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Lethelin Products Co., Manhasset, N.Y.
Mechling Bros. Chemical Co., Line St. & Cooper Creek, Camden, N. J.
Michigan Alkali Co., 60 E. 42nd St., N.Y.
Rohm & Haas Co., Inc., 222 W. Washington Sq., Philadelphia **See pages 62, 63.**

GAS MASKS

Davis Emergency Equip. Co., 55 Van Dam St., N.Y.
Mine Safety Appliances Co., Pittsburgh, Pa.

GAUGES **(see INSTRUMENTS)**

GERANIOL **(see AROMATIC CHEMICALS)**

GERANIUM OIL **(see ESSENTIAL OILS)**

GERANYL ACETATE **(see AROMATIC CHEMICALS)**

GIFT SETS **(see NOVELTY SOAPS and TOILET SOAPS)**

GLASS BOTTLES **(see BOTTLES)**

GLASS JARS **(see BOTTLES)**

GLUES **(see ADHESIVES)**

GLYCERINE (Refined)

Armour & Co., 1355 W. 31st St., Chicago **See page 12.**
Century Stearic Acid Candle Wks., 22 E. 40th St., N. Y.
Colgate-Palmolive-Peet Co., Jersey City, N. J.
Cox, Aspden & Fletcher, 39 Cortlandt St., N.Y. (Import)
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Larkin Company, Buffalo, N.Y.
Lever Bros. Co., Cambridge, Mass.
Los Angeles Soap Co., Los Angeles, Calif.
Leo Pasternak, 110 William St., N. Y. (Brokers)
Procter & Gamble Co., Cincinnati
Swift & Co., Union Stock Yards, Chicago
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 West 65th St., Chicago

GLYCERINE DISTILLATION PLANTS

E. B. Badger Co., 25 Pitts St., Boston
Albert H. Bruecke, 30 Rockefeller Plaza, N.Y. **See page 18.**
William Garrigue & Co., 9 S. Clinton St., Chicago
Alan Porter Lee, Inc., 136 Liberty St., N.Y. **See page 44.**
Ernest Scott & Co., Fall River, Mass.
Swenson Evaporator Co., Harvey, Ill.
Wurster & Sanger, 5201 Kenwood Ave., Chicago
Zaremba Co., 506 Crosby Bldg., Buffalo, N. Y.

GREASES

(see also Brokers and Dealers)

Armour & Co., 1355 W. 31st St., Chicago **See page 12.**
Belleville Rendering Co., Belleville, Ill.
Consolidated Rendering Co., 40 N. Market St., Boston
Cudahy Packing Co., 111 W. Monroe St., Chicago
Darling & Co., 4201 S. Ashland Ave., Chicago
Otto A. C. Hagen Co., 929 Ledger Bldg., Phila.
Long Island Soap Co., Meeker Ave. & Bridgewater St., Bklyn.
Procter & Gamble Co., Cincinnati
J. H. Redding Co., 17 Battery Pl., N. Y.
Snow Brokerage Co., 15 William St., N.Y. **See page facing 3rd cover.**
Louis Stern Sons, Inc., Produce Exchange, N.Y.
Theobald Animal By-Prod. Co., Kearny, N.J.
Toledo Tallow Co., Toledo, Ohio
Waltham Tallow Co., Waltham, Mass.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N. Y. **See page 75.**
Wilson & Co., Union Stock Yards, Chicago
Wilson-Martin Co., Swanson St., Phila.
Woburn Degreasing Co., 1200 Harrison Ave., Harrison, N. J.

GREEN SOAP **(see POTASH SOAP)**

GRINDING MACHINERY

Abbe Engineering Co., 50 Church St., N.Y.
American Pulverizer Co., 18th & Austin Sts. St. Louis
C. O. Bartlett & Snow Co., 6200 Harvard Ave., Cleveland
Blanchard Machine Co., 64 State St., Cambridge, Mass.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Gruendler Patent Crusher & Pulverizer Co., 900 N. First St., St. Louis
B. F. Gump Co., 431 S. Clinton St., Chicago

GRINDING MACHINERY (Cont'd)

Houchin Machy. Co., Hawthorne, N.J.
See page 40.
Huber Machine Co., 259 46th St., Brooklyn
See page 41.
Kent Machine Works, 137 Gold St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.
J. M. Lehman Co., 248 W. Broadway, N.Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
See page 48.
Olsen & Tilgner Mfg. Co., 2276 Elston Ave., Chicago
Prater Pulverizer Co., 1829 S. 55th Ave., Chicago
Raymond Bros. Impact Pulverizer Co., 1302 N. Branch St., Chicago
Chas. Ross & Sons, 150 Classon Ave., Bklyn.
Patterson Foundry & Machine Co., East Liverpool, O.
Sprout Waldron & Co., Muncy, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.
F. I. Stokes Machine Co., Philadelphia, Pa.
Sturtevant Mill Co., Harrison Sq., Boston
Williams Patent Crusher & Pulverizer Co., 2709 N. 9th St., St. Louis

GUMS

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
C. W. Campbell Co., 157 Chambers St., N.Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
A. C. Drury & Co., 219 East North Water St., Chicago, Ill.
Ehrmann-Strauss Co., 200 W. Houston St., N.Y.
J. L. Hopkins & Co., 220 Broadway, N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 43.
George H. Lincks, 123 Front St., N.Y.
Murray & Nickell Mfg. Co., 2608 Arthington St., Chicago
Neuman-Buslee & Wolfe, 224 W. Huron St., Chicago, Ill.
Orbis Products Corp., 215 Pearl St., N.Y.
See page 4.
R. J. Prentiss & Co., 100 Gold St., N.Y.
See page 56.
J. H. Redding, Inc., 17 Battery Place, N.Y.
Stein, Hall & Co., 285 Madison Ave., N.Y.
Stroock & Wittenberg, 17 Battery Pl., N.Y.
Thurston & Braidich, 55 Van Dam St., N.Y.
G. A. Wharry & Co., 24 State St., N.Y.

GUNS, Powder (see BELLOWS, Insect Powder)

GYM-FINISH FLOOR SEAL (see FLOOR FINISHES).

HAND (Mechanic's) SOAP

Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Columbia Soap & Chem. Co., Inc., 324 Leavenworth St., San Francisco
Davies Young Soap Co., Dayton, O.
See page 23.
Eagle Soap Corp., Huntington, Ind.
See page 28.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N.J.
Flash Chem. Co., 160 2nd St., Cambridge, Mass.
Fuld Bros., 702 S. Wolfe St., Baltimore
See page 33.
Hewitt Soap Co., Dayton, O.
R. M. Hollingshead Co., 840 Cooper St., Camden, N.J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
Mione Mfg. Co., Collingdale, Pa.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Skat Co., Hartford, Conn.
John T. Stanley Co., 642 W. 30th St., N.Y.
See page 67.
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
United Cleanser Mfg. Co., 160 Second St., Cambridge, Mass.
Utility Co., 636 W. 44th St., N.Y.
Vanco Co., Manchester, Conn.
Vliet Soap Co., 638 Monroe St., Brooklyn

HAND SOAP, Powdered

Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Clifton Chemical Co., 247 Front St., N.Y.
See page 19.
J. Eavenson & Sons, Camden, N. J.
Packwood Mfg. Co., St. Louis.
Peck's Products Co., St. Louis, Mo.
Presto Mfg. Co., 4044 20th Ave., S., Minneapolis
Procter & Gamble Co., Cincinnati, O.
John T. Stanley Co., 642 W. 30th St., N.Y.
See page 67.
Warren Soap Mfg. Co., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

HARDWATER SOAPS (see COCONUT OIL SOAPS)

HELIOTROPIN (See AROMATIC CHEMICALS)

HEXALIN

E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**

HOLDERS (Deodorizing Block)

(see also Cans, Fibre)
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Cin-Made Corp., (fibre) 294 Eggleston Ave., Cincinnati
Clifton Chemical Co., 247 Front St., N. Y.
See page 19.

HOLDERS (Deodorizing Block) (Cont'd)

Eagle Soap Co., Huntington, Ind.
See page 28.
Edelman Co., 6249 S. St. Lawrence Ave., Chicago
Fuld Bros., 702 S. Wolfe St., Baltimore
See page 33.
Garnet Chem. Corp., 911 N. Lumber St., Allentown, Pa.
Hockwald Chem. Co., 30 Bluxome St., San Francisco
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
Palmer Products, Inc., Waukesha, Wis.
Rochester Germicide Co., 16 Dowling Pl., Rochester, N.Y.
Uncle Sam Chemical Co., 329 E. 29th St., N.Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

HOMOGENIZERS (DISPERSION EQUIPMENT)

Abbe Engineering Co., 50 Church St., N.Y.
Manton-Gaulin Mfg. Co., 19 Charlton St., Everett, Mass.

HORTICULTURAL SPRAY BASE (See PETROLEUM BASES)

HOUSEHOLD INSECTICIDE BASE (See PETROLEUM BASES)

HOUSEHOLD INSECTICIDES, LIQUID

American Mothproof Co., 2330 W. View St., Los Angeles.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Cal.
Antiseptol Co., 5524 Northwest Highway, Chicago
Baird & McGuire, Inc., Holbrook, Mass.
See pages 14, 15.
Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Cary Mfg. Co., Joliet, Ill.
Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Churchill Mfg. Co., 309 Douglas St., Sioux City, Ia.
Cino Chem. Prods. Co., 210 Main St., Cincinnati, O.
Clifton Chemical Co., 247 Front St., N. Y.
See page 19.
Columbia Soap & Chem. Co., Inc., 324 Leavenworth St., San Franciso
Delta Chemical Co., 1815 Riverside Drive, N.Y.
Derris, Inc., 79 Wall St., N.Y. **See page 24.**
C. B. Dolge Co., Westport, Conn.
Eagle Soap Corp., Huntington, Ind.
See page 28.
Edelman Co., 6249 S. St. Lawrence Ave., Chicago
Exterminating Materials Co., 712 Amsterdam Ave., N.Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
See page 33.
G. E. Specialty Co., 155 Quincy St., Bklyn.
Globe Sanitary Supply Co., 2249 E. 38th St., Los Angeles
James Good, Inc., Kensington, Phila.
See page 38.
Goulard & Olena, 140 Liberty St., N.Y.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Harley Soap Co., 2832 E. Pacific St., Phila.
Hockwald Chem. Co., 30 Bluxome St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Jansen Soap & Chem. Co., 324 Leavenworth St., San Francisco, Cal.
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
La Maison Prods. Inc., 80 York St., Brooklyn, N.Y.
Maywood Pest Exterminators, 1206 S. 1st Ave., Maywood, Ill.
McCormick & Co., Inc., Baltimore, Md.
See page 76.
Edgar A. Murray Co., 2703 Guoin St., Detroit
Palmer Products, Inc., Waukesha, Wis.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Perrow Chem. Co., Hurt, Va.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Selig Co., 336 Marietta St., Atlanta, Ga.
Shores Co., Cedar Rapids, Ia.
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
Standard Oil Co. of Calif., San Francisco
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
Uncle Sam Chemical Co., 329 E. 29th St., N.Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Vliet & Co., 638 Monroe St., Brooklyn
White Tar Co., Kearny, N. J. **See page 2.**
Robert C. White Co., Falls of Schuylkill, Phila.

HOUSEHOLD INSECTICIDES, POWDERED

Allaire Woodward & Co., Peoria, Ill.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Cal.
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Clifton Chemical Co., 247 Front St., N.Y.
See page 19.
Delta Chemical Co., 1815 Riverside Drive, N.Y.
Eagle Soap Corp., Huntington, Ind.
See page 28.
Exterminating Materials Co., 712 Amsterdam Ave., N.Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
See page 33.
Globe Sanitary Supply Co., 2249 E. 38th St., Los Angeles
James Good, Inc., Kensington, Philadelphia
See page 38.
Goulard & Olena, Inc., 140 Liberty St., N.Y.
Hockwald Chem. Co., 30 Bluxome St., San Francisco

HOUSEHOLD INSECTICIDES, POWDERED (Cont'd)

R. M. Hollingshead Corp., Camden, N. J.
J. L. Hopkins & Co., 220 Broadway, N.Y.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Maywood Pest Exterminators, 1206 S. 1st Ave., Maywood, Ill.
McCormick & Co., Inc., Baltimore, Md. **See page 76.**
McLaughlin Gormley King Co., 1715—5th St., S. E., Minneapolis, Minn.
Edgar A. Murray Co., 2703 Guoin St., Detroit
Palmer Products, Inc., Waukesha, Wis.
S. B. Penick & Co., 132 Nassau St., N.Y. **See page 51.**
John Powell & Co., 114 E. 32nd St., N.Y. **See pages 54, 55.**
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Ratin Labs., 116 Broad St., N.Y.
Selig Co., 336 Marietta St., Atlanta, Ga.
Shores Co., Cedar Rapids, Ia.
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
Uncle Sam Chemical Co., 329 E. 29th St., N.Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
White Tar Co., Kearny, N. J. **See page 2.**

HYDROGENATED OILS

Procter & Gamble Co., Cincinnati, O.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Wesson Oil & Snowdrift Co., 21 West St., N.Y.
Wyandotte Oil Co., Wyandotte, Mich.

HYDROGENATION PLANTS (See OIL HYDROGENATION PLANTS)

HYDROSULFITES (Soap Bleaches)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N. Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Merrimac Chem. Co., 148 State St., Boston
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila. **See pages 62, 63.**
Royce Chem. Co., Carlton Hill, N.J.

HYDROXYCITRONELLAL (See AROMATIC CHEMICALS)

HYPOCHLORITES (see CHLORINE) (see LAUNDRY BLEACH)

INFUSORIAL EARTH (see ABRASIVES)

INSECT FLOWERS (See PYRETHRUM)

INSECT POWDER (see PYRETHRUM)

INSECT POWDER GUNS (See BELLOWS)

INSECTICIDE SPRAY PERFUMES (see PERFUMING COMPOUNDS)

INSECTICIDES, SYNTHETIC

Research Lab., Cedar Rapids, Ia.
Rohm & Haas, Inc., 222 W. Washington Sq., Phila. **See pages 62, 63.**

INSECTICIDE TESTING (see CONSULTANTS)

INSTRUMENTS, Meters, Gauges, Thermometers, Etc.

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland
Bausch & Lomb Optical Co., Rochester, N.Y.
S. F. Bowser & Co., 1300 E. Creighton Ave., Ft. Wayne, Ind.
Bristol Co., Waterbury, Conn.
Brown Instrument Co., Wayne & Windrim Sts., Philadelphia
Buffalo Meter Co., 2890 Main St., Buffalo, N.Y.
G. M. Davis Regulator Co., 2541 S. Washtenaw, Chicago
Eimer & Amend, 19th St. & 3rd Ave., N.Y.
Foxboro Co., Foxboro, Mass.
Liquidometer Corp., Long Island City, N.Y.
Pneumercator Co., Sperry Bldg., Brooklyn
Precision Thermometer Co., 1434 Brandywine St., Philadelphia
Republic Flow Meters Co., 2240 Diversey Blvd., Chicago
Taylor Instrument Co., Rochester, N.Y.

IONONE (Violet Base) (See AROMATIC CHEMICALS)

JAPAN WAX (See WAXES)

JARS, GLASS (See BOTTLES)

JASMIN, ARTIFICIAL (See AROMATIC CHEMICALS)

KAOLIN (See CLAYS)

KEROSENE (See PETROLEUM)

KETTLES

Alloy Prods. Corp., 221 Madison St., Waukesha, Wis.
Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
Bethlehem Foundry & Machine Co., Grand Central Bldg., N.Y.

KETTLES (Cont'd)

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Edge Moor Iron Wks., 30 Rockefeller Plaza, N.Y.
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
Huber Machine Co., 259—46th St., Brooklyn **See page 41.**
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
Littleford Bros., 443 E. Pearl St., Cincinnati
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Patterson Foundry & Machine Co., East Liverpool, O.
Pfaudler Co., 89 East Ave., Rochester, N.Y.
Sowers Mfg. Co., 1296 Niagara St., Buffalo, N.Y.
F. J. Stokes Mach. Co., Philadelphia, Pa.
Struthers-Wells Co., Warren, Pa.
Stuart & Peterson Co., Burlington, N. J.
H. B. Trout Co., 240 Ohio St., Buffalo, N.Y.

KIESELGUHR (Infusorial Earth) (see ABRASIVES AND FILLERS)

KITS (Wooden) (see PAILS, WOODEN)

LABELING MACHINES (Bottles and Cans)

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
Burt Machine Co., Baltimore, Md.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Economic Machinery Corp., Worcester, Mass.
Edward Ermold Co., 652-64 Hudson St., N.Y.
J. L. Ferguson Co., Joliet, Ill.
National Labeling Machine Co., 129 W. 19th St., Long Island City, N.Y.
New Jersey Machine Corp., Hoboken, N. J.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Pneumatic Scale Corp., Norfolk Downs, Mass. **See pages 52, 53.**
Potdevin Machine Co., 1224—38th St., Brooklyn (hand)
F. B. Redington Co., 112 S. Sangamon St., Chicago
Scientific Filter Co., 1 Franklin Square, N.Y.

LABELING MACHINES (Boxes & Cakes)

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
New Jersey Machine Corp., Hoboken, N.J.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Pneumatic Scale Corp., Norfolk Downs, Mass. **See pages 52, 53.**
Scientific Filter Co., 1 Franklin Square, N.Y.
Stokes & Smith Co., Summerdale, Phila., Pa. **See page 69.**

LABELS

American Lithographic Co., 52 E. 19th St., N.Y.
Dennison Mfg. Co., Framingham, Mass.
Foxon Co., Providence, R. I.
Henderson Lithographing Co., Norwood, Cincinnati
R. J. Kittredge Co., 812 W. Superior St., Chicago
Stobridge Lithographing Co., Norwood Station, Cincinnati
U. S. Printing & Litho. Co., Cincinnati, O.

LABORATORIES, CONSULTING (see Consultants)

LABORATORY APPARATUS

Central Scientific Co., 460 E. Ohio St., Chicago
Eimer & Amend, 19th St. & 3rd Ave., N.Y.
Empire Lab. Supply Co., 559 W. 132nd St., N.Y.
Fisher Scientific Co., Pittsburgh
Emil Greiner Co., 55 Van Dam St., N.Y.
Laboratory Construction Co., 1111 Holmes St., Kansas City, Mo.
Scientific Materials Co., Pittsburgh
Arthur H. Thomas Co., Wash Sq., Phila.
Will Corp., Rochester, N.Y.

LABORATORY CHEMICALS

J. T. Baker Chemical Co., Phillipsburg, N. J.
General Chemical Co., 40 Rector St., N.Y. **See page 35.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Mallinckrodt Chemical Works, 3600 N. 2nd St., St. Louis
Merck & Co., Rahway, N. J.
Pfaltz & Bauer, Inc., 350 5th Ave., N.Y.
Sterling Products Co., Easton, Pa.

LANOLIN

Bopf-Whittam Corp., Westfield, N.J.
Hummel Chemical Co., 90 West St., N.Y.
Adolphe Hurst & Co., 330 W. 42nd St., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Lanatex Prods. Sales Corp., Box 52, Station Q., Elizabeth, N. J.
Merck & Co., Rahway, N. J.
Pfaltz & Bauer, Inc., 350 5th Ave., N.Y.

LAUNDRY BLEACH (HYPOCHLORITE) (see also CHLORINE)

H. Kohnstamm & Co., 91 Park Pl., N.Y.
Chrisman Supply Co., Fayetteville, N.Y.
Legrand Bleach Corp., 111-49th St., Bklyn.
Mathieson Alkali Wks., 60 E. 42nd St., N.Y.
Warner Chemical Co., 405 Lexington Ave., N.Y. **See page 73.**
Monsanto Chemical Co., St. Louis, Mo.
Jos. Turner & Co., 630 5th Ave., N.Y. **See page 70.**
Surpass Chemical Co., Albany, N.Y.

LAUNDRY BLUE

Fezandie & Sperrle, 205 Fulton St., N.Y.
Interstate Color Co., 5 Beekman St., N.Y.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
National Aniline & Chemical Co., 40 Rector St., N.Y.
Pylam Products Co., 799 Greenwich St., N.Y.
See page 58.

LAUNDRY SOAP, CAKE

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 12.
Cincinnati Soap Co., Cincinnati, O.
Du Bois Soap Co., Cincinnati, O.
J. Eavenson & Sons, Del. & Penn St., Camden, N. J.
Fels & Co., Philadelphia
Hewitt Soap Co., Dayton, O.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn
Los Angeles Soap Co., Los Angeles, Calif.
Manhattan Soap Co., Bristol, Pa.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
National Soap Co., 357 S. 25th St., Tacoma, Wash.
Newell Gutradt Co., 350 Fremont St., San Francisco, Cal.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
North Coast Chem. & Soap Wks., Seattle Wash.
John T. Stanley Co., 642 W. 30th St., N.Y.
See page 67.
Swift & Co., Union Stock Yards, Chicago
Vliet Soap Co., 63 Monroe St., Brooklyn
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., Phila.

LAUNDRY SOAP, CHIP

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 12.
Cincinnati Soap Co., Cincinnati, O.
Du Bois Soap Co., Cincinnati, O.
J. Eavenson & Sons., Del. & Penn. Sts., Camden, N. J.
Harris Soap Co., Buffalo, N.Y.
Haskins Bros. & Co., Sioux City, Iowa
Hewitt Soap Co., Dayton, Ohio
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn
Los Angeles Soap Co., Los Angeles, Calif.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
Nat'l Milling & Chem. Co., Manayunk, Phila.
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
John T. Stanley Co., 642 W. 30th St., N.Y.
See page 67.
Swift & Co., Union Stock Yards, Chicago
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., Phila.

LAUNDRY SOAP, POWD. AND GRAN.

American Soap Powder Wks., 100 Van Dyke St., Brooklyn, N.Y.
Armour Soap Wks., 1355 W. 31st St., Chicago
See page 12.
Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Du Bois Soap Co., Cincinnati, O.
J. Eavenson & Sons, Del. & Penn. Sts., Camden, N. J.
Hewitt Soap Co., Dayton, Ohio
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Lever Bros. Co., Cambridge, Mass.
Los Angeles Soap Co., Los Angeles, Calif.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
Nat'l Milling & Chem. Co., Manayunk, Phila.
National Soap Co., 357 South 25th St., Tacoma, Wash.
North Coast Soap & Chem. Wks., Seattle, Wash.
Paper Makers Chemical Corp., Kalamazoo, Mich.
Peck's Prods., Co., 522-40 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
John T. Stanley Co., 642 W. 30th St., N.Y.
See page 67.
Stevens Soap Corp., 202 Sullivan St., Bklyn.
Swift & Co., Union Stock Yards, Chicago
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., Cincinnati, O.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago, Ill.
Chas. W. Young & Co., Phila.

LAUNDRY SODA, see SODA

LAUNDRY SOURS (Fluoride)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
American Fluoride Corp., 151 W. 19th St., N.Y.
Bowker Chem. Co., 50 Church St., N.Y.
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Hummel Chem. Co., 90 West St., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 43.
Jungmann & Co., 157 Chambers St., N.Y.
See inside back cover.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Pfaltz & Bauer, Inc., 350 5th Ave., N.Y.
V. C. Products Co., Philadelphia
Victor Chemical Wks., 141 W. Jackson Blvd. Chicago

LAURIC ACID (see FATTY ACIDS)

LAURYL ALCOHOL
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. See page facing page 1.
Michel Export Co., 95 Broad St., N.Y.

LAVENDER OIL (See ESSENTIAL OILS)

LEAD ARSENATE
Bowker Chemical Co., 50 Church St., N.Y.
Dow Chemical Co., Midland, Mich., See page 26.
General Chemical Co., 40 Rector St., N.Y. See page 35.

LECITHIN
American Lecithin Corp., Corona Ave., Elmhurst, L. I.
Digestive Ferments Co., 920 Henry St., Detroit
R. W. Greeff & Co., 10 E. 40th St., N.Y.
Elmhurst, L. I.
Jungmann & Co., 157 Chambers St., N.Y. See inside back cover.
Pfaltz & Bauer, Inc., 350 5th Ave., N.Y.
Soya Corp. of America, 30 Rockefeller Pl., N.Y.
Wilson Labs., 4221 S. Western Blvd., Chicago

LEMON OIL (See ESSENTIAL OILS)

LEMONGRASS OIL (See ESSENTIAL OILS)

LIME SULFUR
Allen Co., Pittstown, N. J.
Dow Chemical Co., Midland, Mich., See page 26.
E. I. du Pont de Nemours & Co., Wilmington, Del. See page 27.

LINALOE OIL (See ESSENTIAL OILS)

LINALOOL (See AROMATIC CHEMICALS)

LINALYL ACETATE (See AROMATIC CHEMICALS)

LINERS (see BAG LINERS)

LINING MACHINERY (Cartons)
Pneumatic Scale Corp., Norfolk Downs, Mass. See pages 52, 53.
F. B. Redington Co., 112 S. Sangamon St., Chicago

LINSEED OIL
(see also Brokers and Dealers)
Archer-Daniels-Midland Corp., Minneapolis, Minn.
William O. Goodrich Co., Milwaukee, Wis.
Spencer Kellogg & Sons, Buffalo, N.Y.
Kelloggs & Miller, Amsterdam, N.Y.
Minnesota Linseed Oil Co., Minneapolis, Minn.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N.Y.

LINSEED OIL SOAP (see POTASH SOAPS)

LIQUID SOAP AND BASE (see POTASH SOAPS)

LIQUID SOAP COLORS (see COLORS)

LIQUID SOAP PERFUMES (See PERFUMING COMPOUNDS)

MACHINERY (USED) (see USED MACHINERY)

MAGNESIUM STEARATE (see STEARATES)

MARINE SOAPS (see SALT WATER SOAPS)

MARSEILLES SOAP (see TEXTILE SOAPS, POTASH SOAPS)

MECHANIC'S SOAP (see HAND SOAP)

MEDICINAL SOAPS, CAKE
Armour Soap Wks., 1355 W. 31st St., Chicago See page 12.
Cincinnati Soap Co., Cincinnati
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Hewitt Soap Co., Dayton, O.
Los Angeles Soap Co., Los Angeles
Newell Gutradt Co., 350 Fremont St., San Francisco, Cal.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N.Y. See page 67.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

MEDICINAL SOAPS, LIQUID (see POTASH SOAPS)

MENTHOL
(see also Essential Oils)
Aromatic Products, Inc., 15 E. 30th St., N.Y. See page 13.
H. J. Baker & Bros., 271 Madison Ave., N.Y.
S. W. Bridges & Co., 70 Pine St., N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Fritzsche Bros., Inc., 76 Ninth Ave., N. Y.

MENTHOL (Cont'd)

Hosken & Co., 56 Pine St., N.Y.
Magnus, Mabee & Reynard, Inc., 32 Cliff St., N.Y.
McKesson & Robbins, Inc., 79 Cliff St., N.Y.
Mitsui & Co., 350—5th Ave., N.Y.
Orbis Products Corp., 215 Pearl St., N.Y. **See page 4.**
R. J. Prentiss & Co., 100 Gold St., N.Y. **See page 56.**
Schimmel & Co., 601 W. 26th St., N.Y.
Sherka Chemical Co., 86 Orange St., Bloomfield, N.J.
S. Suzuki & Co., 230 Park Ave., N.Y.

MERCURY BICHLORIDE (Corrosive Sublimate)

General Chem. Co., 40 Rector St., N.Y. **See page 35.**
Heyden Chemical Corp., 50 Union Sq., N.Y.
Mallinckrodt Chemical Works, St. Louis
Merck & Co., Rahway, N. J.
New York Quinine & Chem. Wks., N. 11th & Berry Sts., Brooklyn
Chas. Pfizer & Co., 81 Maiden Lane, N.Y.

METAL CAPS **(see CAPS, METAL)**

METAL POLISH **(see POLISH)**

METERS **(see INSTRUMENTS)**

METHYL ANTHRANILATE

(see also Aromatic Chemicals)

Dow Chemical Co., Midland, Mich., **See page 26.**
A. Maschmeijer, Jr., Inc., 43 W. 16th St., N.Y.

METHYL SALICYLATE (Artificial Wintergreen)

(see also Aromatic Chemicals)

Dow Chemical Co., Midland, Mich., **See page 26.**
Heyden Chemical Corp., 50 Union Sq., N.Y.
Merck & Co., Rahway, N.J.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis

MILLS, COLLOID

Abbe Engineering Co., 50 Church St., N.Y.
Consolidated Products Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Manton-Gaulin Mfg. Co., 19 Charlton St., Everett, Mass.
Travis Colloid Research Co., 119 Broad St., N.Y.
U. S. Colloid Mill Corp., 13th St. & East Ave., L. I. City, N.Y.

MILLS, SOAP POWDER **(see SOAP MACHINERY & GRINDING MACHINERY)**

MILLS, TOILET SOAP **(see SOAP MACHINERY)**

MINERAL OIL, WHITE, **see WHITE MINERAL OIL**

MINERAL SOAP STOCK, **see PETROLATUM**

MIRBANE OIL (Nitrobenzene)

(see also Essential Oils)

Calo Chemical Co., Bound Brook, N. J.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. **See page facing page 1.**
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
National Aniline & Chemical Co., 40 Rector St., N.Y.
Naugatuck Chemical Co., 1790 Broadway, N.Y.

MIXERS (Portable)

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See page 6, 7.**
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Ertel Eng. Co., 120 E. 16th St., N.Y. **See page 29.**
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
Huber Machine Co., 259—46th St., Brooklyn **See page 41.**
Frank B. Lomax Co., 365 W. Oak St., Chgo.
Mixing Equipment Co., Inc., 1024 Garson Ave., Rochester, N.Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago, (New & Used) **See page 48.**
Patterson Fdy. & Mch. Co., E. Liverpool, O.
Pfaudler Co., 89 East Ave., Rochester, N.Y...

MIXING MACHINERY (Change Can)

Abbe Engineering Co., 50 Church St., N.Y.
Arthur Colton Co., Detroit, Mich.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Huber Machine Co., 259—46th St., Brooklyn **See page 41.**
Kent Machine Works, 39 Gold St., Brooklyn
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Patterson Foundry & Mch. Co., E. Liverpool, Ohio
Chas. Ross & Son Co., 150 Classon Ave., Brooklyn
Vol-U-Meter Co., 707 Ohio St., Buffalo, N.Y.
Waterville Fndry. & Machine Co., Waterville, N.Y.

MIXING MACHINERY (Dry Products)

Abbe Engineering Co., 50 Church St., N.Y.
Besser Mfg. Co., Alpena, Mich.
Blystone Mfg. Co., Cambridge Springs, Pa.

MIXING MACHINERY (Dry Prods.) (Cont'd)

Chain Belt Co., Milwaukee, Wis.
Consol. Concrete Machinery Corp., Adrian, Mich.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 23.**
Construction Machinery Co., Waterloo, Iowa
J. H. Day Co., 1144 Harrison Ave., Cincinnati
W. E. Dunn Mfg. Co., Holland, Mich.
Edge Moor Iron Wks., 30 Rockefeller Plaza, N.Y.
J. B. Foote Foundry Co., Frederickstown, O.
B. F. Gump Co., 431 S. Clinton St., Chicago
Houchin Machy. Co., Hawthorne, N.J. **See page 40.**
S. Howes Co., Inc., Silver Creek, N.Y.
Huber Machine Co., 259—46th St., Brooklyn **See page 41.**
E. B. Kelley Co., 43-87 Vernon Ave., L. I. City
Koehring Co., 31st St. and Concordia Ave., Milwaukee, Wis.
Lancaster Iron Works, Lancaster, Pa.
Lansing Co., Lansing, Mich.
MacLellan Mixer Co., Owensboro, Ky.
Newmann Tallow & Soap Machinery Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Ransome Concrete Machinery Co., Dunellen, N. J.
Republic Iron Works, Tecumseh, Mich.
Chas. Ross & Son Co., 150 Classon Ave., Brooklyn
Ernest Scott & Co., P. O. Box 82, Fall River, Mass.
T. L. Smith Co., Milwaukee, Wis.
Sprout Waldron & Co., Muncy, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.
F. J. Stokes Machine Co., Philadelphia, Pa.
Struthers-Wells Corp., Warren, Pa.
Aurelio Tanzi Engineering Co., 235—4th Ave., N.Y.

MIXING MACHINERY (General)

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
Baker-Perkins Co., 250 Park Ave., N.Y.
Beach-Russ Co., 50 Church St., N.Y.
Arthur Colton Co., Detroit
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Edge Moor Iron Wks., 30 Rockefeller Plaza, N.Y.
Houchin Machy. Co., Hawthorne, N.J. **See page 40.**
S. Howes Co., Inc., Silver Creek, N.Y.
Huber Machine Co., 259—46th St., Brooklyn **See page 41.**
Kent Machine Works, 37 Gold St., Brooklyn
Lancaster Iron Works, Lancaster, Pa.
J. M. Lehmann Co., 248 West B'way, N.Y.
Littleford Bros., 443 E. Pearl St., Cincinnati
Mixing Equipment Co., Inc., 1024 Garson Ave., Rochester, N.Y.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Patterson Foundry & Mach. Co., East Liverpool, Ohio
Pfaudler Co., 89 East Ave., Rochester, N.Y.
Read Machinery Co., York, Pa.
Chas. Ross & Son Co., 150 Classon Ave., Brooklyn
Ernest Scott & Co., Fall River, Mass.
Sowers Mfg. Co., 1296 Niagara St., Buffalo, N.Y.
Sprout Waldron & Co., Muncy, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.
F. J. Stokes Mach. Co., Philadelphia, Pa.
Struthers-Wells Co., Warren, Pa.
Turbo Mixer Corp., 247 Park Ave., N.Y.
Vol-U-Meter Co., 210 Ohio St., Buffalo, N.Y.
Waterville Foundry & Machine Co., Waterville, N.Y.

MIXING TANKS (see TANKS, WOODEN, STEEL and GLASS, MIXING)

MONEL METAL EQUIPMENT

Edge Moor Iron Wks., 30 Rockefeller Plaza, N.Y.
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
International Nickel Co., 67 Wall St., N.Y.
Wurster & Sanger, Inc., 5201 Kenwood Ave. Chicago

MONOCHLORBENZENE (see SOLVENTS, ORGANIC)

MONTAN WAX (See WAXES)

MOP HANDLES

Algoma Mfg. Co., Green Bay, Wis.
Amer. Standard Mfg. Co., 2509 Lime St., Chicago
Stanley H. Coffin, 12 Pearl St., Boston
Continental Car-Na-Var Corp., Brazil, Ind.
Eagle Woodenware Mfg. Co., Hamilton, O.
Economy Mop Wringer Co., 1944 W. 21st St., Chicago
Erie Mop & Wringer Co., East Syracuse, N.Y.
Howard Dustless Duster Co., Boston
W. E. Kautenberg Co., Freeport, Ill.
Massasoit Mfg. Co., 233 Bway., N.Y.
Palmer Prods., Inc., Waukesha, Wis.
Silver-Chamberlin Co., Clayton, NY.
White Mop Wringer Co., Fultonville, N.Y.

MOP WRINGERS AND PAILS

Stanley H. Coffin, 12 Pearl St., Boston
Colson Mfg. Co., Elyria, O.
Dobbins Mfg. Co., North St. Paul, Minn. **See page 25.**
Eagle Woodenware Mfg. Co., Hamilton, Ohio
Economy Mop Wringer Co., 1944 W. 21st St., Chicago
Geuder, Paesche & Frey, Milwaukee, Wis.
Illinois Duster Co., 1944 Webster Ave., Chgo.
S. C. Lawlor Co., 124 N. Curtis St., Chicago
Muskegon Sanitary Supply Co., Muskegon Heights, Mich.
Palmer Prods., Inc., Waukesha, Wis.
Sanitary Mfg. Co., 926 Ft. Wayne Ave., Indianapolis
Tarbox Lever Corp., 61 Chandler St., Buffalo
White Mop Wringer Co., Fultonville, N.Y.

MOPPING TANKS AND TRUCKS

Eagle Woodenware Mfg. Co., Hamilton, O.
Economy Mop Wringer Co., 1944 W. 21st St., Chicago
S. C. Lawlor Co., 124 N. Curtis St., Chicago
F. H. Lawson Co., Cincinnati
Palmer Prods., Inc., Waukesha, Wis.
White Mop Wringer Co., Fultonville, N.Y.

MOPS

Alabama Broom & Mattress Co., Huntsville, Ala.
Algoma Mfg. Co., Green Bay, Wis.
Amer. Standard Mfg. Co., 2509 S. Green St., Chicago
Burdett-Rose Mfg. Co., 6100 Independence Rd., Kansas City, Mo.
California Cotton Mills Co., Oakland, Calif.
Chattanooga Broom & Mop Co., Chattanooga, Tenn.
Clark Bros. Mfg. Co., 34 N. Front St., Phila.
Stanley H. Coffin, 12 Pearl St., Boston, Mass.
Continental Car-Na-Var Corp., Brazil, Ind.
Eagle Woodenware Mfg. Co., Hamilton, O.
Howard Dustless Duster Co., Boston, Mass.
W. E. Kautenberg Co., P. O. Box 255, Freeport, Ill.
Klenzall Mfg. Co., Atlanta, Ga.
Palmer Prods., Inc., Waukesha, Wis.
Pioneer Mfg. Co., Cleveland, Ohio
Rubon Woodfin'g & Prod. Co., 500 W. 7th St., Kansas City, Mo.
Sanitary Mfg. Co., 926 Ft. Wayne Ave., Indianapolis
Schaefer-Wetcher Co., 445 W. Jefferson Ave., Detroit
Silver-Chamberlain Co., Clayton, N. J.
T. C. Smyth Mfg. Co., Union City, Ind.
Tate Mfg. Co., Boston, Mass.
M. J. Toohey & Co., Fall River, Mass.
Tuscaloosa Mills, Tuscaloosa, Ala.
Tu-Way Products Co., 445 W. Jefferson Ave. Detroit, Mich.
Yocma Mills, Water Valley, Miss.

MOSQUITO LARVAECIDES

Baird & McGuire, Inc., Holbrook, Mass. **See pages 14, 15.**
Cary Mfg. Co., Joliet, Ill.
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Eagle Soap Corp., Huntington, Ind. **See page 28.**
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
Hockwald Chemical Co., 30 Bluxome St., San Francisco
Hunt Mfg. Co., Lisbon Rd., Cleveland
McCormick & Co., Inc., Baltimore, Md. **See page 76.**
Merck & Co., Rahway, N.J.
Palmer Prods., Inc., Waukesha, Wis.
Sherwood Petroleum Co., Bush Terminal Bldg., No. 1, Brooklyn
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
White Tar Co., Kearny, N. J. **See page 2.**

MOTH PROOFING COMPOUNDS

American Cyanamid & Chemicals Corp., 30 Rockefeller Plaza, N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Edelman Co., 6249 S. St. Lawrence Ave., Chicago
Exterminating Materials Co., 712 Amsterdam Ave., N.Y.
Fuld Bros., Inc., 702 S. Wolfe St., Baltimore **See page 33.**
General Dyestuffs Corp., 435 Hudson St., N.Y.
R. W. Greeff & Co., 10 E. 40th St., N.Y.
Maywood Pest Exterminators, 1206 S. 1st Ave., Maywood, Ill.
Merck & Co., Rahway, N.J.
Murray & Nickell Mfg. Co., 2608 Arthington St., Chicago
John Powell & Co., 114 E. 31st St., N.Y. **See pages 54, 55.**
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago

MOTH SPRAYS (see HOUSEHOLD INSECTICIDES, LIQUID)

MOTTLED SOAPS

Hewitt Soap Co., Dayton, O
Lightfoot Schultz Co., Hoboken, N. J.
Los Angeles Soap Co., Los Angeles
National Soap Co., P. O. Box 1613, Tacoma, Wash.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Geo. A. Schmidt Co., 236 W. North Ave., Chgo.
John T. Stanley Co., 642 W. 30th St., N.Y. **See page 67.**
M. Werk Co., Cincinnati, O.
Allen B. Wrisley Co., 6801 W. 65th St., Chgo.

MOUSE SEEDS (see POISONED SEEDS)

MUSKS, ARTIFICIAL (See AROMATIC CHEMICALS)

NAPHTHA, see SOLVENT NAPHTHA

NAPHTHALENE

American-British Chem. Supplies, Inc., 180 Madison Ave., N.Y. **See page 9.**
Barrett Co., 40 Rector St., N.Y. **See page 16.**
S. H. Bell Co. 1407 Gulf Bldg., Pittsburgh
Dominion Tar & Chem. Co., Ltd., 430 Canada Cement Bldg., Montreal
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
William E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
Koppers Co., Koppers Bldg., Pittsburgh, Pa. **See page 2.**
Neville Co., Pittsburgh
Reilly Tar & Chem. Corp., Indianapolis **See page 59.**
White Tar Co., Kearny, N. J. **See page 2.**

NAPHTHALENE PERFUMES (see PERFUMING COMPOUNDS)

NAPHTHALENE SULFONATES

E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Dyestuffs Corp., 435 Hudson St., N.Y.
National Aniline & Chem. Co., 40 Rector St., N.Y.

NEROLI OIL (Artificial) see METHYL ANTHRANILATE)

NICKEL-CLAD EQUIPMENT (see also SOAP MACHINERY)

Edge Moor Iron Wks., 30 Rockefeller Plaza, N.Y.
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
International Nickel Co., 67 Wall St., N. Y. C.
Lukens Steel Corp., Coatesville, Pa.

NICKEL PIPING, PUMPS, EQUIPMENT, Etc. (see SOAP MACHINERY)

NICOTINE COMPOUNDS

Goulard & Olena, Inc., 140 Liberty St., N.Y.
Hood River Spray Co., Hood River, Ore.
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Lethelin Products Co., Manhasset, N.Y.
Sanocide Spray Co., Fennville, Mich.
Tobacco By-Products & Chem. Corp., Columbia Bldg., Louisville, Ky.

NOVELTY SOAPS

Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N.J.
John T. Stanley Co., 642 W. 30th St., N.Y. **See page 67.**
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

ODORLESS KEROSENE (see Petroleum Base, Deodorized)

OIL HYDROGENATION PLANTS

Albert Bruecke, 30 Rockefeller Plaza, N.Y. **See page 18.**
William Garrigue Co., 9 S. Clinton St., Chicago
Alan Porter Lee, Inc., 136 Liberty St., N.Y. **See page 44.**
Robinson, Butler, Hemingway & Co., Box 371, Bound Brook, N. J.
Wurster & Sanger, Inc., 5201 Kenwood Ave., Chicago

OIL MILL EQUIPMENT

V. D. Anderson Co., 1935 W. 96th St., Cleveland
Albert Bruecke, 30 Rockefeller Plaza, N.Y. **See page 18.**
Buckeye Iron & Brass Works, Dayton, O.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
French Oil Mill Mach. Co., Piqua, O.
William Garrigue Co., 9 S. Clinton St., Chicago
Alan Porter Lee, Inc., 136 Liberty St., N.Y. **See page 44.**
Robinson, Butler, Hemingway Co., Box 371, Bonud Brook, N. J.
Ernest Scott & Co., Fall River, Mass.
Sprout Waldron & Co., Muncy, Pa.
Struthers-Wells Co., Warren, Pa.
Wurster & Sanger, Inc., 5201 Kenwood Ave., Chicago

OIL SOAP (see POTASH SOAPS)

OLEIC ACID (see RED OIL)

OLIVE OIL (Commercial)

(see also Brokers and Dealers)

Irving R. Boody & Co., 99 Wall St., N.Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Eastern Industries, Inc., Ridgefield, N. J.
W. R. Grace & Co., 7 Hanover Sq., N.Y.
Otto A. C. Hagen Co., Ledger Bldg., Phila.
Leghorn Trading Co., 155 E. 44th St., N.Y. **See page 45.**
Francisco Martin, 80 Wall St., N.Y.
J. H. Redding Co., 17 Battery Pl., N.Y.
E. M. Sergeant Pulp & Chemical Co., 350 Fifth Ave., N.Y.
Smith-Weihman Co., 15 Moore St., N.Y. **See page 63.**
Snow Brokerage Co., 15 William St., N.Y. **See page facing 3rd cover.**
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N.Y. **See page 75.**

OLIVE OIL FOOTS

(see also Brokers and Dealers)

T. G. Cooper & Co., 47 N. 2nd St., Phila.
Eastern Industries, Inc., Ridgefield, N. J.
Otto A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
Leghorn Trading Co., 155 E. 44th St., N.Y. **See page 45.**
J. H. Redding Co., 17 Battery Pl., N.Y.
E. M. Sergeant Pulp & Chemical Co., 350 Fifth Ave., N.Y.
Smith-Weihman Co., 15 Moore St., N.Y. **See page 63.**
Snow Brokerage Co., 15 William St., N.Y. **See page facing 3rd cover.**
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N.Y. **See page 75.**

OLIVE OIL SOAPS (see POTASH SOAPS)

ORANGE OIL (See ESSENTIAL OILS)

ORTHODICHLORBENZINE (see PARADICHLORBENZENE

OXALIC ACID
(see also Dealers)
Amer. Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Faesy & Besthoff, Inc., 22 E. 40th St., N.Y.
Innis, Speiden & Company, 117 Liberty St., N.Y. **See page 43.**
Mallinckrodt Chemical Wks., St. Louis, Mo.
Merck & Co., Rahway, N. J.
E. M. Sergeant Pulp & Chemical Co., 350 Fifth Ave., N.Y.
Joseph Turner & Co., 630—5th Ave., N.Y. **See page 70.**
Victor Chemical Works, 141 W. Jackson Blvd., Chicago

PACKAGING MACHINERY (see CARTONING MACHY., FILLING MACHY., WEIGHING EQUIP., WRAPPING MACHY.)

PAILS (Fibre) (see BARRELS, FIBRE)

PAILS (Steel)
American Can Co., 230 Park Ave., N.Y.
Central Can Co., 2415 W. 19th St., Chicago
Fein's Tin Can Co., 284 Furman St., Bklyn.
Geuder, Paeschke & Frey Co., Milwaukee
Independent Can Co., 321 W. Ohio St., Chicago
National Can Co., 110 E. 42nd St., N.Y. **See page 46.**
National Steel Barrel Co., 3860 E. 91st St., Cleveland
Pittsburgh Can Co., Pittsburgh, Pa.
Pressed Steel Tank Co., 5717 Greenfield Ave., Milwaukee, Wisc.
John Trageser Steam Copper Works, Grand Ave., Maspeth, L. I., N.Y.
Vulcan Stamping & Mfg. Co., 4036 W. Lake St., Chicago
Wheeling Corrugating Co., Wheeling, W. Va.
Wilson & Bennett Mfg. Co., 6532 S. Menard Ave., Chicago

PAILS (Wooden)
Beaver Mills, Keene, N. H.
Eagle Woodenware Mfg. Co., Hamilton, O.
Gambrinus Cooperage Works, 930 Mason St., Louisville, Ky.
Impervious Package Co., Keene, N. H.
Menasha Woodenware Co., Menasha, Wis.
Richmond Cedar Works, Richmond, Va.

PALM KERNEL OIL
(see also Brokers and Dealers)
Balfour Guthrie & Co., 67 Wall St., N.Y.
Irving R. Boody & Co., 99 Wall St., N.Y.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Otto A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
Spencer Kellogg & Sons, Buffalo, N.Y.
J. H. Redding Co., 17 Battery Pl., N.Y.
C. F. Simonin's Sons, Tioga & Belgrade Sts., Philadelphia
Smith-Weihman Co., 15 Moore St., N.Y. **See page 63.**
Snow Brokerage Co., 15 William St., N.Y. **See page facing 3rd cover.**
Wilbur-Ellis Co., 17 Battery Pl., N.Y. **See page 75.**

PALM OIL
(see also Brokers and Dealers)
Balfour, Guthrie & Co., 67 Wall St., N.Y.
Irving R. Boody & Co., 99 Wall St., N.Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Otto A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
Leghorn Trading Co., 155 E. 44th St., N.Y. **See page 45.**
J. H. Redding Co., 17 Battery Pl., N.Y.
Smith-Weihman Co., 15 Moore St., N.Y. **See page 73.**
Snow Brokerage Co., 15 William St., N.Y. **See page facing 3rd cover.**
Stein, Hall & Co., 285 Madison Ave., N.Y. (Sumatra)
Wilbur-Ellis Co., 17 Battery Pl., N.Y. **See page 75.**

PAPER CANS (see CANS)

PAPER (Corrugated) (see BOXES, CORRUGATED)

PAPER CUPS
F. N. Burt Co., Batavia, N.Y.
Individual Drinking Cup Co., Easton, Pa.
Vortex Mfg. Co., 430 N. Western Ave., Chicago

PAPER (Fancy Wrapping)
Aluminum Co. of America, Gulf Bldg., Pittsburgh
Beekman Paper & Card Co., 137 Varick St., N.Y.
A. M. Collins Mfg. Co., 1518 Walnut St., Phila.
Louis Dejonge & Co., 155—6th Ave., N.Y.
DuPont Cellophane Co., 350—5th Ave., N.Y.
C. J. Fox Co., 236 Abron St., Providence, R. I.
Fox Paper Co., Lockland, Cincinnati, O.
Hampden Glazed Paper & Card Co., Holyoke, Mass.
Henderson Lithographing Co., Cincinnati
Keller-Dorain Paper Co., 390—4th Ave., N.Y.
New England Card & Paper Co., 10 Hanover St., Springfield, Mass.
Pictorial Package Co., Aurora, Ill.
Marquette Lithograph Co., 730 N. Franklin St., Chicago
Nashua Gummed & Coated Paper Co., Nashua, N. H.
Potomac Lithograph Mfg. Co., Washington, D. C.
Richardson Co., Lockland, O.
Geo. Schmitt & Co., Grand & Florence Sts., Brooklyn
Louis Schulman Co., 465 Broome St., N.Y.

PAPER (Fancy Wrapping) (Cont'd)

Strobridge Lithographing Co., Norwood Station, Cincinnati
Sylvania Industrial Corp., 122 E. 42nd St., N.Y.
Tamm & Co., 66 Duane St., N.Y.
Transcello Paper Co., Milwaukee, Wis.
U. S. Printing & Lithographing Co., Cincinnati, O.
Walther & Co., Inc., 114 Harrison St., Bklyn.
Whiting-Paterson Co., Inc., 320—13th St., Philadelphia
Chas. W. Williams & Co., Inc., 309 Lafayette St., N.Y.

PAPER TOWELS and TISSUES

Brown Co., Portland, Me.
Hoberg Paper & Fibre Co., Green Bay, Wisc.
Scott Paper Co., Chester, Pa.
Straubel Paper Co., Green Bay, Wis.
U. S. Envelope Co., Lititz, Pa.
Victoria Paper Mills Co., Fulton, N.Y.

PARA BLOCKS (see DEODORIZING BLOCKS)

PARADICHLORBENZENE

Dow Chemical Co., Midland, Mich., See page 26.
E. I. du Pont de Nemours & Co., Wilmington, Del. See page 27.
General Chemical Co., 40 Rector St., N.Y. See page 35.
Hooker Electrochemical Co., 60 E. 42nd St., N.Y. See page 39.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis
Niagara Alkali Co., 9 E. 41st St., N.Y. See page 49.
Solvay Sales Corp., 40 Rector St., N.Y. See pages 64, 65.

PARAFFIN

Borne-Scrymser Co., 17 Battery Pl., N.Y.
E. A. Bromund Co., 258 Broadway, N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Gulf Refining Co., Pittsburgh
Innis, Speiden & Co., 117 Liberty St., N.Y. See page 43.
George H. Lincks, 123 Front St., N.Y.
Sherwood Petroleum Co., Bush Terminal Bldg. No. 1, Bklyn.
Sinclair Refining Co., 630—5th Ave., N.Y.
Smith & Nichols, 121 Maiden Lane, N.Y.
Standard Oil Co., (N.J.) 26 Broadway, N.Y.
Strohmeyer & Arpe Co., 139 Franklin St., N.Y.
Texas Co., 135 E. 42nd St., N.Y.

PARAFFIN OILS

Deep Rock Oil Corp., 155 N. Clark St., Chicago
A. C. Drury & Co., 219 East North Water St., Chicago
Gulf Refining Co., Pittsburgh
S. Schwabacher & Co., 25 Beaver St., N.Y.
Sherwood Petroleum Co., Bush Terminal Bldg. No. 1, Brooklyn, N.Y.
Sinclair Refining Co., 630—5th Ave., N.Y.
Shell Petroleum Corp., Shell Bldg., St. Louis
Skelly Oil Co., 121 W. Wacker Drive, Chicago
L. Sonneborn Sons, Inc., 88 Lexington Ave., N.Y. See page 66.

PARAFORMALDEHYDE

E. I. du Pont de Nemours & Co., Wilmington, Del. See page 27.
Heyden Chemical Co., 50 Union Sq., N.Y.
Mallinckrodt Chem. Wks., 2nd & Mallinckrodt Sts., St. Louis, Mo.
Merck & Co., Rahway, N. J.
Sherka Chemical Co., 86 Orange St., Bloomfield, N. J.

PARIS GREEN

Ansbacher-Siegle Corp., Rosebank, S. I.
Chipman Chemical Engineering Co., Bound Brook, N. J.
Dow Chemical Co., Midland, Mich. See page 26.
Fred L. Lavanburg Co., 90 John St., N.Y.
Sherwin-Williams Co., Cleveland

PASTES (see ADHESIVES)

PATCHOULI OIL (see ESSENTIAL OILS)

PEACH KERNEL OIL (see ESSENTIAL

PEANUT OIL

(see also Brokers and Dealers)

Balfour, Guthrie & Co., 67 Wall St., NY..
Irving R. Boody Co., 132 Front St., N.Y.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Otto A. C. Hagen Co., 929 Public Ledger Bldg., Phila.
Spencer Kellogg & Sons, Buffalo, N.Y.
Mitsui & Co., 350—5th Ave., N.Y.
J. H. Redding Co., 17 Battery Pl., N.Y.
Smith-Weihman Co., 15 Moore St., N.Y. See page 63.
Snow Brokerage Co., 15 William St., N.Y. See page facing 3rd cover.
Southern Cotton Oil Co., Produce Exchange, N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N.Y. See page 75.

PEARL ASH (see POTASSIUM CARBONATE)

PENNYROYAL OIL (see ESSENTIAL OILS)

PEPPERMINT OIL (see ESSENTIAL OILS)

PERCOLATORS (for Pyrethrum)

Brighton Copper Works, 2163 Western Ave., Cincinnati
Arthur Colton Co., Detroit, Mich.

PERCOLATORS (for Pyrethrum) (Cont'd)

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Edge Moor Iron Wks., 30 Rockefeller Plaza, N.Y.
Farlinger Rice Co., 56 N. 19th St., East Orange, N. J.
Karl Kiefer Machine Co., Cincinnati, O.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Pfaudler Co., 89 East Ave., Rochester, N.Y.
Ernest Scott & Co., Fall River, Mass.
F. J. Stokes Machine Co., Philadelphia

PERFUME DISSEMINATORS

Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Ellis Davidson Co., 40 W. 22nd St., N.Y.
Florence Art Co., 54 W. 3rd St., N.Y.
Fuld Bros., Inc., 702 S. Wolfe St., Baltimore **See page 33.**
Robinson Clay Prod. Co., Empire State Bldg., N.Y. (On special order.)

PERFUMING COMPOUNDS

van Ameringen-Haebler, Inc., 315—4th Ave., N.Y. **See pages 10, 11.**
Aromatic Products, Inc., 15 E. 30th St., N.Y. **See page 13.**
Ph. Chaleyer, Inc., 160 E. 56th St., N.Y.
Antoine Chiris Co., 147 Waverly Pl., N.Y.
Compagnie Parento, Croton, N.Y.
Dodge & Olcott Co., 180 Varick St., N.Y.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago
E. I. Du Pont de Nemours & Co., Inc., Wilmington, Del. **See page facing page 1.**
Ehrmann-Strauss Co., 200 W. Houston St., N.Y.
Evergreen Chemical Co., 160—5th Ave., N.Y.
Felton Chemical Co., 603 Johnson Ave., Brooklyn **See page 31.**
Firmenich & Co., 135—5th Ave., N.Y.
Chas. Fischbeck Co., 119 W. 19th St., N.Y. **See page 32.**
Benj. French, Inc., 160—5th Ave., N.Y.
Fritzsche Brothers, Inc., 76 Ninth Ave., N.Y.
Florasynth Laboratories, 1513 Amsterdam Ave., Bronx, N.Y.
General Drug Co., 170 Varick St., N.Y.
Givaudan-Delawanna, Inc., 80—5th Ave., N.Y. **See inside front cover, 37.**
Heine & Co., 54 Cliff St., N.Y.
Hymes Bros. Co., 37 Howard St., N.Y.
Industrial Organics, 151 W. 25th St., N.Y.
Lanvoix Chem. Co., 549 W. Randolph St., Chgo.
Pierre Lemoine, 62 Watts St., N.Y.
Geo. Lueders & Co., 427 Washington St., N.Y.
Magnus, Mabee & Reynard, 32 Cliff St., N.Y.
A. Maschmeijer, Jr., Inc., 43 W. 16th St., N.Y.
Neuman-Buslee & Wolfe, 224 W. Huron St., Chicago
Orbis Products Corp., 215 Pearl St., N.Y. **See page 4.**
Pfaltz & Bauer, 350—5th Ave., N.Y.
Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.
Riviera Products Co., 215 W. Ohio St., Chicago, Ill.
H. C. Ryland, Inc., 161 Water St., N.Y.
Schimmel & Co., 601 W. 26th St., N.Y.
Edwin Seebach Co., 912 Broadway, N.Y.
C. A. Seguin Co., 500 N. Dearborn St., Chicago
Wm. G. Sibbach & Co., 201 S. 2nd Ave., Maywood, Ill.
Geo. Silver Import Co., 365—4th Ave., N.Y.
Ungerer & Co., 13 W. 20th St., N.Y. **See page facing front cover, 71.**
Van Dyk & Co., 57 Wilkinson Ave., Jersey City, N. J.
Albert Verley, Inc., 11 E. Austin Ave., Chicago **See page 72.**

PETIT GRAIN OIL **(see ESSENTIAL OILS)**

PETROLATUM (Petroleum Jelly)

Borne-Scrymser & Co., 17 Battery Pl., N.Y.
Cheseborough Mfg. Co., 17 State St., N.Y.
Malone Oil Co., 2199 E. 18th St., Cleveland
Pennsylvania Refining Co., Karns City, Pa.
S. Schwabacher & Co., 25 Beaver St., N.Y. (Liquid)
Shell Petroleum Corp., Shell Bldg., St. Louis
Sherwood Petroleum Co., Bush Terminal Bldg., No.1, Brooklyn, N.Y.
Sinclair Refining Co., 630—5th Ave., N.Y.
L. Sonneborn Sons, 88 Lexington Ave., N.Y. **See page 66.**
Standard Oil Co., (N.J.), 26 Broadway, N.Y.

PETROLEUM BASE, Deodorized

Atlantic Refining Co., 260 S. Broad St., Phila.
O'Connor & Kremp, 11 W. 42nd St., N.Y.
Sherwood Petroleum Co., Bush Terminal Bldg., No. 1, Brooklyn, N.Y.
L. Sonneborn Sons, 88 Lexington Ave., N.Y. **See page 66.**
Standard Oil Co. of Ind., 910 S. Michigan Ave., Chicago

PETROLEUM BASES (For Agricultural Sprays, Horticultural Sprays, Cattle Sprays, Insecticides, Polishes, etc.)

American Mineral Spirits Co., 330 S. Mich., Chicago
Anderson-Prichard Oil Corp., Oklahoma City, Oklahoma
Atlantic Refining Co., 260 S. Broad St., Phila.
Beacon Oil Co., Everett, Mass.
Deep Rock Oil Corp., 155 N. Clark St., Chicago
Empire Oil Co., Oil City, Pa.
Gulf Refining Co., Frick Annex, Pittsburgh
Indian Refining Co., Lawrenceville, Ind.
O'Connor & Kremp, 11 W. 42nd St., N.Y.
Oil Service Co., Warren, Pa.
Pennsylvania Ref. Co., Karns City, Pa.
Pennzoil Co., Oil City, Pa.
Refiners Petroleum Co., 122 S. Mich. Blvd., Chicago
Shell Petroleum Corp., Shell Bldg., St. Louis
Sherwood Petroleum Co., Bush Terminal Bldg. No. 1, Brooklyn
Sinclair Refining Co., 630—5th Ave., N.Y.
Skelly Oil Co., 121 W. Wacker Drive, Chicago
L. Sonneborn Sons, 88 Lexington Ave., N.Y. **See page 66.**
Standard Oil Co., (Ind.) 910 S. Michigan Ave., Chicago

PETROLEUM BASES (Cont'd)
Standard Oil Co., (N.J.) 26 Broadway, N.Y.
Sun Oil Co., 1608 Walnut St., Philadelphia
Texas Co., 135 E. 42nd St., N.Y.
Tidewater Oil Co., 11 Broadway, N.Y.

PETROLEUM ETHER (see ETHER)

PHENOL (Carbolic Acid)
Barrett Company, 40 Rector St., N.Y.
See page 16.
Dow Chemical Co., Midland, Mich. **See page 26.**
Heyden Chemical Corp., 50 Union Sq., N.Y.
Innis Speiden & Co., 117 Liberty St., N.Y.
See page 43.
William E. Jordan & Bro.,
2590 Atlantic Ave., Bklyn.
Koppers Co., Koppers Bldg., Pittsburgh, Pa.
See page 2.
Merck & Co., Rahway, N. J.
Monsanto Chemical Works, 1724 S. 2nd St.,
St. Louis, Mo.
Reilly Tar & Chem. Corp., Indianapolis
See page 59.

PHENOL-COEFFICIENT DETERMINATIONS (see CONSULTANTS)

PHENYL ACETIC ALDEHYDE (see AROMATIC CHEMICALS)

PHENYL ETHYL ALCOHOL (see AROMATIC CHEMICALS)

PHOSPHOROUS PASTE
John Opitz, Inc., 50-14—39th St.,
Long Island City, N.Y.
Sennewald Drug Co., 8th & Hickory Sts.,
St. Louis

PINE OIL
American Turp. & Tar Co.,
810 S. Broad St., New Orleans
Continental Turp. & Rosin Corp., Laurel, Miss.
Dixie Pine Prods. Co., Hattiesburg, Miss.
General Naval Stores Co., 230 Park Ave., N.Y.
Gulf Naval Stores Supply Co.,
Whitney Bldg., New Orleans
Hercules Powder Co., Wilmington, Del.
National Turp. Prods. Co., Gulf Point, Fla.
Pheonix Naval Stores Co., Gulfport, Miss.
Taylor, Lowenstein & Co., Mobile, Ala.

PINE OIL DISINFECTANTS (see DISINFECTANTS, PINE OIL)

PINE NEEDLE OIL (see ESSENTIAL OILS)

PINE SCRUB SOAPS (see POTASH) SOAPS)

PIPE COILS
Alloy Prods. Corp., 221 Madison St.,
Waukesha, Wisc.
Brighton Copper Works,
2163 Western Ave., Cinn.
Harrisburg Steel Corp., Harrisburg, Pa.
Hartford Tube Products Co., Hartford, Conn.
Houchin Machy. Co., Hawthorne, N. J.
See page 40.
Huber Machine Co., 259—46th St., Brooklyn
See page 41.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., 4100 N. 5th St.,
Philadelphia
Pittsburgh Pipe Coil & Bending Co.,
61 Bridge St., Etna, Pa.
Rempe Co., 340 N. Sacramento Blvd., Chicago
Whitlock Coil Pipe Co., Hartford, Conn.

PLANT SPRAY BASE (See PETROLEUM PRODUCTS)

PLASTIC PRODUCTS
Bakelite Corp., Bound Brook, N.J.
General Electric Co., West Lynn, Mass.
General Plastics, Inc., North Tonawanda, N.Y.
Goodyear Tire & Rubber Co., Akron, O.
Resinox Corp., Terre Haute, Ind.
Toledo Synthetic Prods., Toledo, O.

PLATES, STEEL, CORROSION-RESISTANT (see STEEL, CORROSION-RESISTANT)

PLODDERS (see SOAP MACHINERY)

POISONED SEEDS
Exterminating Materials Co.,
712 Amsterdam Ave., N.Y.
Sennewald Drug Co., Hickory & 8th St.,
St. Louis
Solicide Laboratories, Montclair, N.J.
W. R. Sweeney, Salisbury, Mo.

POLISH BASES (See PETROLEUM BASES)

POLISH PERFUMES (see PERFUMING COMPOUNDS)

POLISHES
Algoma Mfg. Co., Green Bay, Wis.
Antiseptol Co., 5524 Northwest Highway,
Chicago
Armiger Chem. Co., 2155 W. Hubbard St.,
Chicago
Baums Castorine Co., 200 Mathew St.,
Rome, N.Y.
Buckingham Wax Corp., Borden Ave. and
Van Dam St., L. I. City, N.Y.
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co.,
2526 W. Congress St., Chicago
Churchill Mfg. Co., 309 Douglas St.,
Sioux City, Ia.

POLISHES (Cont'd)

Clifton Chemical Co., 247 Front St., N.Y.
See page 19.
Creco Co., Creco Bldg., L. I. City, N.Y.
Davies Young Soap Co., Dayton, O.
See page 23.
Delta Chemical Co., 1815 Riverside Drive, N.Y.
Eagle Soap Corp., Huntington, Ind.
See page 28.
Federal Varnish Co., 333 S. Peoria St., Chicago
See page 30.
Franklin Research Co., 5134 Lancaster Ave., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore
See page 33.
G. E. Specialty Co., 155 Quincy St., Bklyn.
Globe Sanitary Supply Co., 2249 E. 38th St., Los Angeles
James Good, Inc., Kensington, Phila.
See page 38.
Haag Laboratories, 6101 S. May St., Chicago
Harley Soap Co., 2832 E. Pacific St., Phila.
Hockwald Chemical Co., 30 Bluxome St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hull Co., 305 Washington St., Brooklyn
Hunt Mfg. Co., Lisbon Rd., Cleveland
International Metal Polish Co., Indianapolis
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
La Maison Prods. Inc., 80 York St., Bklyn., N.Y.
Masury-Young Co., 76 Roland St., Boston
E. B. Moore & Co., 185 N. Wabash Ave., Chicago
North Coast Soap & Chem. Wks., Seattle, Wash.
Pacific Chem Co., 1241 N. Main St., Los Angeles
Palmer Products, Inc., Waukesha, Wis.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Perrow Chemical Co., Hunt, Va.
Pioneer Mfg. Co., 3053 E. 87th St., Cleveland
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Selig Co., 336 Marietta St., Atlanta, Ga.
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
H. F. Staples Co., Medford, Mass.
John T. Stanley Co., 642 W. 30th St., N.Y.
See page 67.
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
Uncle Sam Chem. Co., 329 E. 29th St., N.Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
V. C. Products Co., Philadelphia
T. F. Washburn Co., 2244 Elston Ave., Chicago
See page 74.
Windsor Wax Co., 53 Park Pl., N.Y.

POTASH (Caustic) (see CAUSTIC POTASH)

POTASH SOAPS

Antiseptol Co., 5524 Northwest Highway, Chicago
Armour Soap Wks., 1355 W. 31st St., Chicago
See page 12.
Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Clifton Chemical Co., 247 Front St., N.Y.
See page 19.
James Counts Soap Co., 2nd & Washington Aves., St. Louis, Mo.
Creco Co., Creco Bldg., L. I. City, N.Y.
Davies Young Soap Co., Dayton, Ohio
See page 23.
Delta Chemical Co., 1815 Riverside Drive, N.Y.
Eagle Soap Corp., Huntington, Ind.
See page 28.
J. Eavenson & Sons, Del. & Penn. Sts., Camden, N. J.
Fuld Bros., 702 S. Wolfe St., Baltimore
See page 33.
Genseke Bros., W. 48th Pl. & Whipple St., Chicago, Ill.
James Good, Inc., Kensington, Phila.
See page 38.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Harley Soap Co., 2832 E. Pacific St., Phila.
Hockwald Chemical Co., 30 Bluxome St., San Francisco
R. M. Hollingshead Corp., Camden, N. J.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Kranich Soap Co., 54 Richards St., Brooklyn
Laurel Soap Mfg. Co., Tioga & Almond Sts., Phila.
Long Island Soap Co., Meeker Ave. & Bridgewater St., Bklyn., N.Y.
Los Angeles Soap Co., Los Angeles, Calif.
La Maison Prods., Inc., 80 York St., Bklyn N.Y.
Marshall Prods., Inc., 806 N. 1st St., St. Louis
Masury-Young Co., 76 Roland St., Boston
Moore Bros. Co., 200 Hudson St., N.Y.
National Oil Products Co., Harrison, N. J.
National Soap Co., 357 South 25th St., Tacoma, Washington
North Coast Chem. & Soap Wks., Seattle, Wash.
Palmer Products, Inc., Waukesha, Wis.
Paper Makers Chemical Corp., Kalamazoo, Mich.
Peck's Prod. Co., 5224 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Royal Soap & Chem. Co., 5111 S. Central Ave., Los Angeles
Geo. A. Schmidt Co., 236 W. North Ave., Chgo.
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
John T. Stanley Co., 642 W. 30th St., N.Y.
See page 67.
Tremco Mfg. Co., 393 East 131st St., Cleveland
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Vliet Soap Co., 638 Monroe St., Brooklyn
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Chas. W. Young & Co., Phila.

POTASSIUM CARBONATE

American Cyanamid & Chemicals Corp., 30 Rockefeller Plaza, N.Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Faesy & Besthoff, 22 E. 40th St., N.Y.
Industrial Chem. Sales Co., 230 Park Ave., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **See page inside back cover.**
Harshaw Chem. Co., Cleveland
Niagara Alkali Co., 9 E. 41st St., N.Y. **See page 49.**
E. M. Sergeant Pulp & Chemical Co., 350—5th Ave., N.Y.
Solvay Sales Corp., 40 Rector St., N.Y. **See pages 64, 65.**
Jos. Turner & Co., 630—5th Ave., N.Y. **See page 70.**
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.

POTASSIUM PERSULFATE

American Cyanamid & Chemicals Corp., 30 Rockefeller Plaza, N.Y.
Buffalo Elec. Chem. Co., River Rd. & Sawyer Ave., Buffalo
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Pfaltz & Bauer, 350—5th Ave., N.Y.
Jos. Turner & Co., 630—5th Ave., N.Y. **See page 70.**

POTASSIUM SILICATE

E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Philadelphia Quartz Co., 123 S. 3rd St., Phila.

POWDER GUNS (see BELLOWS)

POWDERED SOAP (see SOAP, POWDERED)
Do not confuse with SOAP POWDERS

PRESSES (Automatic Soap)

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
R. A. Jones & Co., Cincinnati, O.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**

PRESSES (Foot and Hand Lever for Soap and Para Cakes)

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
Huber Machine Co., 259 46th St., Brooklyn **See page 41.**
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
F. J. Stokes Mach. Co., Philadelphia, Pa.

PRIVATE FORMULAS (see under individual products)

PROPYLENE DICHLORIDE (see SOLVENTS, ORGANIC)

PULVERIZERS (see GRINDING MACHINERY)

PUMICE STONE (see ABRASIVES and FILLERS)

PUMP GUNS (for Insecticides) (see SPRAYERS, see BELLOWS)

PUMPS

Aldrich Pump Co., 1 Pine St., Allentown, Pa.
Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
American Steam Pump Co., Battle Creek, Mich.
Beach-Russ Co., 50 Church St., N.Y.
Blackmer Pump Co., Grand Rapids, Mich.
S. F. Bowser & Co., 1300 E. Creighton Ave., Ft. Wayne, Ind.
Buffalo Forge Co., 490 Broadway, Buffalo, N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
M. T. Davidson Co., 154 Nassau St., N.Y.
Foster Pump Works, 54 Washington St., Brooklyn, N.Y.
Goulds Pumps, Inc., Seneca Falls, N.Y.
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
Huber Machine Co., 259—46th St., Brooklyn **See page 41.**
Ingersoll-Rand Co., 11 Broadway, N.Y.
Karl Kiefer Machine Co., Cincinnati
Lobee Pump & Machine Co., 129 Dearborn St., Buffalo, N.Y.
P. H. & F. M. Roots Co., Connersville, Ind.
Scientific Filter Co., 1 Franklin Square, N.Y.
T. Shriver & Co., Harrison, N.J.
F. J. Stokes Machine Co., Philadelphia, Pa.
Taber Pump Co., 278 Elm St., Buffalo, N.Y.
Viking Pump Co., Cedar Rapids, Iowa
Worthington Pump & Machinery Co., 2 Park Ave., N.Y

PYRETHRUM

Allaire Woodward & Co., Peoria, Ill.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Cal.
Derris, Inc., 79 Wall St., N.Y. **See page 24.**
Hammond Paint & Chemical Co., Beacon, N.Y.
R. Hillier's Sons Corp., 15 Beekman St., N.Y.
J. L. Hopkins & Co., 220 Broadway, N.Y.
McCormick & Co., Baltimore, Md. **See page 76.**
McLaughlin, Gormley King Co., 1715—5th St., S. E., Minneapolis, Minn.

PYRETHRUM (Cont'd)

Murray & Nickell Mfg. Co.,
2608 Arthington St., Chicago
S. B. Penick & Co., 132 Nassau St., N.Y.
See page 51.
John Powell & Co., 114 E. 32nd St., N.Y.
See pages 54, 55.
R. J. Prentiss & Co., 100 Gold St., N.Y.
See page 56.
Sherwood Petroleum Co., Bush Terminal Bldg. No. 1, Brooklyn.

PYRETHRUM EXTRACT

Allaire Woodward & Co., Peoria, Ill.
An-Fo Mfg. Co., 3129 Elmwood Ave., Oakland, Cal.
Baird & McGuire, Inc., Holbrook, Mass.
See pages 14, 15.
Cino Chem. Prods. Co., 210 Main St., Cincinnati
Hammond Paint & Chemical Co., Beacon, N.Y.
R. Hillier's Sons Corp., 15 Beekman St., N.Y.
J. L. Hopkins & Co., 220 Broadway, N.Y.
McCormick & Co., Baltimore **See page 76.**
McLaughlin Gormley King Co.,
1715—5th St., S. E., Minneapolis
Murray & Nickell Mfg. Co.,
2608 Arthington St., Chicago
S. B. Penick & Co., 132 Nassau St., N.Y.
See page 51.
John Powell & Co., 114 E. 32nd St., N.Y.
See pages 54, 55.
R. J. Prentiss & Co., 100 Gold St., N.Y.
See page 56.
Seacoast Labs., Inc., 156 Perry St., N.Y.
Sherwood Petroleum Corp., Bush Terminal Bldg. No. 1, Brooklyn

RAPESEED OIL

Balfour, Guthrie & Co., 67 Wall St., N.Y.
Irving R. Boody & Co., 99 Wall St., N.Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
Leghorn Trading Co., 155 E. 44th St., N.Y.
See page 45.
J. H. Redding, Inc., 17 Battery Pl., N.Y.
Smith-Weihman Co., 15 Moore St., N.Y.
See page 63.
Snow Brokerage Co., 15 William St., N.Y.
See page facing 3rd cover.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N.Y.
See page 75.

RAT EXTERMINATING PRODUCTS

Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co.,
2526 W. Congress St., Chicago
Eagle Soap Corp., Huntington, Ind.
See page 28.
Exterminating Materials Co., 712 Amsterdam Ave., N.Y.
Fuld Bros., 702 S. Wolfe St., Baltimore
See page 33.
Goulard & Olena, Inc., 140 Liberty St., N.Y.
Guarantee Exterminating Co.,
500—5th Ave., N.Y.
Hockwald Chemical Co., 30 Bluxome St., San Francisco
J. L. Hopkins & Co., 220 Broadway, N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 43.
Lethelin Products Co., Manhasset, N.Y.
Maywood Pest Exterminators, 1206 S. 1st Ave., Maywood, Ill.
Murray & Nickell Mfg. Co.,
2608 Arthington St., Chicago
John Opitz, Inc., Long Island City, N.Y.
Pfaltz & Bauer, Inc., 350—5th Ave., N.Y.
John Powell & Co., 114 E. 32nd St., N.Y.
See pages 54, 55.
Ratin Laboratories, Inc., 112 Broad St., N.Y.
Sennewald Drug Co., 8th & Hickory Sts., St. Louis
Soilicide Laboratories, Upper Montclair, N. J.
Trojan Products & Mfg. Co.,
3107 S. Wabash Ave., Chicago
U. S. Sanitary Specialties Corp.,
435 S. Western Ave., Chicago
Virus Limited, Inc., 10 E. 33rd St., N.Y.

RAT POISONS (see SQUILLS, THALLIUM SULFATE, etc.)

RED OIL (Oleic Acid)

(see also Brokers and Dealers)

American British Chem. Supplies, Inc..
180 Madison Ave., N.Y. **See page 9.**
Celina Stearic Acid Co., Celina, Ohio
Century Stearic Acid Candle Works,
22 E. 40th St., N.Y.
Darling & Co., 4201 S. Ashland Ave., Chicago
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
A. Gross & Co., 122 E. 42nd St., N.Y.
W. C. Hardesty & Co., 41 E. 42nd St., N.Y.
Harkness & Cowing, Ivorydale, Cincinnati
Procter & Gamble Co., Cincinnati
Theobald Animal By-Products Co., Kearny, N.J.
M. Werk Co., St. Bernard, Cincinnati
Wilson-Martin Co., Snyder Ave. & Swanson St., Philadelphia

REFINING EQUIPMENT (Glycerine)

E. B. Badger Co., 25 Pitts St., Boston
Buffalo Foundry & Machine Co., Buffalo, N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y.
(Used) **See page 21.**
William Garrigue & Co., 9 S. Clinton St., Chicago
Alan Porter Lee, Inc., 136 Liberty St., N.Y.
See page 44.
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
Newman Tallow & Soap Machy. Co.,
1051 W. 35th St., Chicago (Used)
See page 48.
Ernest Scott & Co., Fall River, Mass.
Walter E. Simmons Co., Boston
Struthers-Wells Co., Warren, Pa.
Swenson Evaporator Co., Harvey, Ill.
Wurster & Sanger, 5201 Kenwood St., Chicago
Zaremba Co., 506 Crosby Bldg., Buffalo, N.Y.

REFRIGERATING EQUIPMENT

York Ice Machine Co., York, Pa.

REMELTERS

Consolidated Products Co., 15 Park Row, N.Y. (Used) **See page 21.**
Houchin Machinery Co., Hawthorne, N. J. **See page 40.**
Huber Machine Co., 259—46th St., Brooklyn **See page 41.**
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
Patterson Foundry & Mach. Co., East Liverpool, O.
Struthers-Wells Co., Warren, Pa.
Wurster & Sanger, Inc., 5201 Kenwood Ave., Chicago

RHODINOL (see AROMATIC CHEMICALS)

ROACH POWDER (see HOUSEHOLD INSECTICIDE POWDER)

ROSE OIL (see ESSSENTIAL OILS)

ROSEMARY OIL (see ESSENTIAL OILS)

ROSIN

Antwerp Naval Stores Co., Savannah, Ga.
Continental Turp. & Rosin Corp., Laurel, Miss.
Dixie Pine Prods. Co., Hattiesburg, Miss. (wood)
General Naval Stores Co., 230 Park Ave., N.Y. (Wood)
Georgia Rosin Prods. Co., Brunswick, Ga.
Guignon & Green, 17 Battery Pl., N.Y.
Hercules Powder Co., Wilmington, Del. (Wood)
Industrial Chem. Sales Co., Inc., 230 Park Ave., N.Y.
Paper Makers Chemical Corp., Kalamazoo, Mich.
Pheonix Naval Stores Co., Gulfport, Miss. (wood)
Taylor, Lowenstein & Co., Mobile, Ala.
G. A. Wharry & Co., 24 State St., N.Y.

ROTENONE (see DERRIS)

ROTTEN STONE (see ABRASIVES and FILLERS)

RUBBER STOPPERS (see LABORATORY APPARATUS)

SADDLE SOAP

Asco Chemical Co., 239 Alabama Ave., Bklyn., N.Y.
R. M. Hollingshead Corp., Camden, N. J.
Rome Soap Mfg. Co., Rome, N. Y.

SAFROL (see AROMATIC CHEMICALS)

SAL AMMONIAC (see AMMONIUM CHLORIDE)

SAL SODA

(see also Dealers)

American Cyanamid & Chemicals Corp., 30 Rockefeller Plaza, N.Y.
Church & Dwight Co., 70 Pine St., N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Chem. Co., 40 Rector St., N.Y. **See page 35.**
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Mathieson Alkali Works, 60 E. 42nd St., N.Y.
Mechling Bros. Chemical Co., Camden, N.J.
Michigan Alkali Co., 10 E. 40th St., N.Y.
Paper Makers Chemical Corp., Kalamazoo, Mich.
Solvay Sales Corp., 40 Rector St., N.Y. **See pages 64, 65.**

SALT (Common Salt)

(see also Dealers)

Columbia Alkali Co., 30 Rockefeller Plaza, N.Y. **See page 20.**
Diamond Alkali Co., First Nat. Bk. Bldg., Pittsburgh
Dow Chemical Co., Midland, Mich. **See page 26.**
Hooker Electrochemical Co., 60 E. 42nd St., N.Y. **See page 39.**
International Salt Co., 475—5th Ave., N.Y.
Jefferson Salt & Mining Co., Louisville, Ky.
LeRoy Salt Co., LeRoy, N.Y.
Myles Salt Co., 1007 Camp St., New Orleans, La.
Pomeroy Salt Co., Pomeroy, Ohio
Remington Salt Co., Ithaca, N.Y.
Saginaw Salt Prods. Co., Saginaw, Mich.
Solvay Sales Corp., 40 Rector St., N.Y. **See pages 64, 65.**

SALT WATER SOAP

Armour Soap Wks., 1355 W. 31st St., Chicago **See page 12.**
J. Eavenson & Sons, Camden, N. J.
Hewitt Soap Co., Dayton, O.
Los Angeles Soap Co., Los Angeles
Newell-Gutradt Co., San Francisco
Peck's Products Co., St. Louis, Mo.
Procter & Gamble Co., Cincinnati, O.
John T. Stanley Co., 642 W. 30th St., N.Y. **See page 67.**
M. Werk Co., Cincinnati

SAMPLE CASES

Arrow Mfg. Co., 15th & Hudson Sts., Hoboken, N. J.
Knickerbocker Case Co., 2311 N. Crawford Ave., Chicago

SAND, see ABRASIVES

SANDALWOOD OIL (see ESSENTIAL OILS)

SAPONIN (Ext. Soap Bark)

Dodge & Olcott Co., 180 Varick St., N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Fritzsche Brothers, Inc., 76 Ninth Ave., N.Y.
Hoffman-LaRoche, Inc., Nutley, N. J.
Interstate Color Co., 5 Beekman St., N.Y.
Jungmann & Co., 157 Chambers St., N.Y.
See page inside back cover.
Geo. Lueders & Co., 427 Washington St., N.Y.
Merck & Co., Rahway, N. J.
Murray & Nickell Mfg. Co., 2608 Arthington St., Chicago
S. B. Penick & Co., 132 Nassau St., N.Y.
See page 51.
Pfaltz & Bauer, Inc., 350—5th Ave., N.Y.
Ungerer & Co., 13 W. 20th St., N.Y.
See page facing inside front cover, 71.

SASSAFRAS, Artificial (see AROMATIC CHEMICALS

SCIENTIFIC INSTRUMENTS (see INSTRUMENTS)

SCOURING POWDERS

American Soap Powder Wks., Inc., 98 Van Dyke St., Brooklyn
Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Churchill Mfg. Co., 309 Douglas St., Sioux City, Ia.
Cincinnati Soap Co., Cincinnati
Delta Chemical Co., 1815 Riverside Drive, N.Y.
Du Bois Soap Co., Cincinnati, O.
Fuld Bros., 702 S. Wolfe St., Baltimore
See page 33.
Hockwald Chem. Co., 30 Bluxome St., San Francisco
Hubman Supply Co., 225 N 4th St., Columbus, O.
Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.
Los Angeles Soap Co., Los Angeles
National Milling & Chem. Co., Manayunk, Phila.
Pacific Chem. Co., 1412 N. Main St., Los Angeles
Paper Makers Chemical Corp., Kalamazoo, Mich.
Peck's Prods. Co., 5224 N. 2nd St., St. Louis
Poland Soap Works, Anniston, Ala.
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Solvay Sales Corp., 40 Rector St., N.Y.
See pages 64, 65.
John T. Stanley Co., 642 W. 30th St., N.Y.
See page 67.
Stevens Soap Corp., 200 Sullivan St., Brooklyn
Swift & Co., Chicago
Trojan Products & Mfg. Co., 3107 S. Wabash Ave., Chicago
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
V. C. Products Co., Philadelphia
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SCOURING SOAPS (Bars)

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 12.
Hewitt Soap Co., Dayton, O.
Los Angeles Soap Co., Los Angeles
National Soap Co., P. O. Box 1613, Tacoma, Wash.
Procter & Gamble, Cincinnati, O.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N.Y.
See page 67.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SCREENS (Screening Equipment)

C. O. Bartlett & Snow Co., 6200 Harvard Ave., Cleveland, O.
B. F. Gump Co., 431 S. Clinton St., Chicago
J. H. Day Co., Cincinnati
J. M. Lehmann Co., 248 W. Broadway, N.Y.
Ludlow-Sawyer Wire Co., St. Louis, Mo.
Sprout, Waldron & Co., Muncy, Pa.
Stedman's Fdy. & Machine Works, Aurora, Ind.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Sturtevant Mill Co., Boston, Mass.
W. S. Taylor Co., Cleveland, O.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Wickwire Spencer Steel Co., 41 E. 42nd St., N.Y.

SCRUBBING MACHINES (see FLOOR MACHINES)

SCRUBBING SOAPS, LIQUID (see POTASH SOAPS)

SEALING MACHINERY (Bags)

B. F. Gump Co., 431 S. Clinton St., Chicago
New Jersey Machine Corp., Hoboken, N. J.
Stokes & Smith Co., 4915 Summerdale Ave., Phila.
See page 69.

SEALING MACHINERY (Cartons)

Burt Machine Co., 401 E. Oliver St., Baltimore
Consolidated Prods. Co., 15 Park Row, N.Y. (Used)
See page 21.
J. L. Ferguson Co., Joliet, Ill.
Johnson Automatic Sealer Co., Battle Creek, Mich.
R. A. Jones & Co., Cincinnati, O.
New Jersey Machine Corp., Hoboken, N.J.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)
See page 48.
Pneumatic Scale Corp., Norfolk Downs, Mass.
See pages 52, 53
F. B. Redington Co., 112 S. Sangamon St., Chicago
Stokes & Smith Co., 4915 Summerdale Ave., Phila.
See page 69.
Triangle Package Machinery Co., 906 Spaulding Ave., Chicago

SEALING MACHINERY (Cases)

H. R. Bliss Co., Niagara Falls, N.Y.
Burt Machine Co., 401 E. Oliver St., Baltimore
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) See page 21.
J. L. Ferguson Co., Joliet, Ill.
Karl Kiefer Machine Co., Cincinnati, O.
McStay Machine Co., 3036 E. 5th St., Los Angeles
J. L. Morrison Co., Niagara Falls, N.Y.
Nashua Package Sealing Co., Nashua, N. H.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) See page 48.
Standard Sealing Equipment Corp., Rawson St., Long Island City, N.Y.

SEEDS, POISONED (see POISONED SEEDS)

SESQUICARBONATE OF SODA (for Bath Salts, etc.), (see SODIUM SESQUICARBONATE)

SHAMPOO BASE and LIQUID

Antiseptol Co., 5524 Northwest Highway, Chicago
Armour Soap Wks., 1355 W. 31st St., Chicago See page 12.
Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Chemical Supply Co., 2450 Canal Rd., Cleveland
Clifton Chemical Co., 247 Front St., N.Y. See page 19.
Columbia Soap & Chem. Co., Inc., 324 Leavenworth St., San Francisco
James Counts Soap Co., 2nd & Washington Aves., St. Louis
Davies-Young Soap Co., Dayton, O. See page 23.
Delta Chemical Co., 1815 Riverside Drive, N.Y.
Eagle Soap Corp., Huntington, Ind. See page 28.
Fuld Bros., 702 S. Wolfe St., Baltimore See page 33.
James Good, Inc., Kensington, Phila. See page 38.
Haag Laboratories, Inc., 6101 S. May St., Chicago
Harley Soap Co., 2832 E. Pacific St., Phila.
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Jansen Soap & Chem. Co., 324 Leavenworth St. San Francisco
Kranich Soap Co., 54 Richards St., Brooklyn
Los Angeles Soap Co., Los Angeles
Michel Export Co., 95 Broad St., N.Y.
New York Soap Corp., 294 Pearl St., N.Y. See page 47.
Palmer Products, Inc., Waukesha, Wis.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
John Powell & Co., 114 E. 32nd St., N.Y. See pages 54, 55.
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N.Y. See page 67.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHAMPOOS, POWDER AND CAKE

Cincinnati Soap Co., Cincinnati
Davies-Young Soap Co., Dayton, O. See page 23.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
North Coast Chem. & Soap Wks., Seattle, Wash.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
John Powell & Co., 114 E. 32nd St., N.Y. See pages 54, 55.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N.Y. See page 67.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHAMPOOS, SOAPLESS

Davies-Young Soap Co., Dayton, O. See page 23.
Fuld Bros., 702 S. Wolfe St., Baltimore See page 33.
Michel Export Co., 95 Broad St., N.Y.
National Oil Products Co., Harrison, N.J.
Procter & Gamble Co., Cincinnati, O.
Richards Chemical Works, Jersey City, N.J.
L. Sonneborn Sons, Inc., 88 Lexington Ave., N.Y. See page 66.

SHAVING CREAM

Cincinnati Soap Co., Cincinnati
Clifton Chemical Co., 247 Front St., N.Y. See page 19.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken ,N. J.
Procter & Gamble Co., Cincinnati
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHAVING CREAM BASE

Clifton Chemical Co., 247 Front St., N.Y. See page 19.
John Powell & Co., 114 E. 32nd St., N.Y. See pages 54, 55.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHAVING SOAP, POWDER and STICK

Cincinnati Soap Co., 7th & Elm St., Cincinnati
Colgate-Palmolive-Peet Co., Jersey City, N.J.
J. Eavenson & Sons, Del & Penn. Sts., Camden, N. J.
Holman Soap Co., 3100 Fox St., Chicago, Ill.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Los Angeles Soap Co., Los Angeles

SHAVING SOAP, POWDER and STICK (Cont'd)

Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N.Y. **See page 67.**
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SHIPPING CASES (see BOXES)

SHEEP DIPS (see CATTLE DIPS)

SHELLAC

Barrett Varnish Co., 2242 Belmont Ave., Chicago
Berry Bros., 211 Leib St., Detroit, Mich.
Chas. Comerford Shellac Co., 509 Third Ave., Brooklyn, N.Y.
Gillespie-Rogers-Pyatt Co., 80 John St., N.Y.
A. R. Haeuser Co., 52 Warren St., Brooklyn
George H. Lincks, 123 Front St., N.Y.
Mac-Lac Co., Inc., 80 Cliff St., N.Y.
A. G. Watt Co., 7016 Euclid Ave., Cleveland, O.
Wm. Zinsser & Co., 516 W. 59th St., N.Y.

SIFTER TOP CANS (see CANS, Sifter Top)

SILICA

American Colloid Co., 363 W. Superior St., Chicago
Central Silica Corp., Comer Bldg., Birmingham, Ala.
Chas. B. Chrystal Co., 11 Park Pl., N.Y.
Goris & Arnstein, 3700 Racine Ave., Chicago
K. F. Griffiths & Co., 110 E. 42nd St., N.Y.
Hammill & Gillespie, 225 Broadway, N.Y.
Harshaw Chem. Co., Cleveland
Illinois Silica Co., Cairo, Ill.
Industrial Chem. Sales Co., Inc., 230 Park Ave., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
International Silica Co., Cairo, Ill.
N. J. Pulverizing Co., 15 Park Row, N.Y.
Pennsylvania Pulverizing Co., Lewistown, Pa.
Jas. H. Rhodes & Co., 153 W. Austin Ave., Chicago
L. A. Salomon & Bro., 216 Pearl St., N.Y.
Silica Prods. Co., 700 Baltimore Ave., Kansas City, Mo.
A. E. Starkie Co., 1645 S. Kilburn Ave., Chicago **See page 68.**
Tamms Silica Co., 228 N. La Salle St., Chicago
Wishnick-Tumpeer, Inc., 295 Madison Ave., N.Y.

SILICATE OF SODA (see SODIUM SILICATE)

SLABBERS (see SOAP MACHINERY)

SOAP BARK & EXTRACT (see SAPONIN)

SOAP, CASTILE (see CASTILE SOAP)

SOAP, CHIP (see CHIP SOAP)

SOAP COLORS (see COLORS)

SOAP DIES

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Anthony J. Fries, 717 Sycamore St., Cincinnati
Houchin Machinery Co., Hawthorne, N.J. **See page 40.**
Huber Mach. Co., 259—46th St., Brooklyn **See page 41.**
Jas. H. Matthews & Co., 3942 Forbes St., Pittsburgh
Mooney & Bueter, 564 W. Randolph St., Chicago
I. Schwartz Engraving & Die Works, 38 W. 21st St., N.Y.

SOAP DISPENSERS (Liquid)

Bobrick Chemical Corp., 111-117 Garey St., Los Angeles
Bobrick Dispenser Co., 215—4th Ave., N.Y.
Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Eagle Soap Corp., Huntington, Ind. **See page 28.**
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
Garnet Chem. Corp., 911 N. Lumber St., Allentown, Pa.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Monmouth Prods. Co., 221 E. 131st St., Cleveland
Moore Bros. Co., 200 Hudson St., N.Y.
Palmer Products, Inc., Waukesha, Wis.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

SOAP DISPENSERS (Powder)

Auto Sun Products Co., 529 Poplar St., Cincinnati
Bobrick Chemical Corp., 111-117 Garey St., Los Angeles
Bobrick Dispenser Co., 215—4th Ave., N.Y.
Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Moore Bros. Co., 200 Hudson St., N.Y.
Packwood Mfg. Co., St. Louis
Palmer Products, Inc., Waukesha, Wis.
Presto Mfg. Co., 4044—20th Ave., S., Minneapolis, Minn.
Procter & Gamble Co., Cincinnati, O.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
Vasco Products Co., Elmira, N.Y.

SOAP DISPENSING SYSTEMS (Multi-unit with Tanks)

Bobrick Chemical Corp., 111-117 Garey St., Los Angeles
Bobrick Dispenser Co., 215—4th Ave., N.Y.
Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Eagle Soap Corp., Huntington, Ind. **See page 28.**

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SOAP DISPENSING SYSTEMS (Cont'd)

Fuld Bros., 702 S. Wolfe St., Baltimore
See page 33.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Moore Bros. Co., 200 Hudson St., N.Y.
Palmer Products, Inc., Waukesha, Wis.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

SOAP DRYERS (see DRYERS)

SOAP, FLAKE (see CHIP SOAP)

SOAP FRAMES (see FRAMES)

SOAP KETTLES (see KETTLES)

SOAP, LINSEED OIL (see POTASH SOAPS)

SOAP MACHINERY

Consolidated Prods. Co., 15 Park Row, N.Y. (Used)
See page 21.
Wm. Garrigue & Co., 9 S. Clinton St., Chicago
Houchin Machinery Co., Hawthorne, N. J.
See page 40.
Huber Mach. Co., 259—46th St., Brooklyn
See page 41.
J. M. Lehmann Co., 248 West Broadway, N.Y.
Newman Tallow & Soap Machinery Co., 1051 W. 35th St., Chicago (New & Used)
See page 48.
Wurster & Sanger, 5201 Kenwood Ave., Chicago

SOAP MIXING DEVICE (for mixing potash, soap and water)

Clifton Chemical Co., 247 Front St., N.Y.
See page 19.
Davies Young Soap Co., Dayton, O.
See page 23.
Solutionizer Co., 7721 S. State St., Chicago

SOAP PERFUMES (see PERFUMING COMPOUNDS)

SOAP POWDER MILLS (see MILLS, SOAP POWDER)

SOAP, POWDERED (White neutral powdered soap, powdered castile soap, etc. Do not confuse with Soap Powders.)

Armour Soap Wks., 1355 W. 31st St., Chicago
See page 12.
J. L. Hopkins & Co., 220 Broadway, N.Y.
Kranich Soap Co., 54 Richards St., Brooklyn, N.Y.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Los Angeles Soap Co., Los Angeles
Murray & Nickell Mfg. Co., 2608 Arthington St., Chicago
S. B. Penick & Co., 132 Nassau St., N.Y.
See page 51.
John Powell & Co., 114 E. 32nd St., N.Y.
See pages 54, 55.
R. J. Prentiss & Co., 100 Gold St., N.Y.
See page 56.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N.Y.
See page 67.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

SOAP POWDERS

(Do not confuse with powdered white soap)

American Soap Powder Wks., Inc., 98 Van Dyk St., Bklyn.
Armour Soap Wks., 1355 W. 31st St., Chicago
See page 12.
Baums Castorine Co., 200 Mathew St., Rome, N.Y.
Du Bois Soap Co., Cincinnati
J. Eavenson & Sons, Del. & Penn. Sts., Camden, N. J.
Hewitt Soap Co., Dayton, O.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Lever Brothers Co., Cambridge, Mass.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
National Milling & Chem. Co., Manayunk, Phila.
North Coast Soap & Chem. Wks., Seattle, Wash.
Paper Makers Chemical Corp., Kalamazoo, Mich.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
Stevens Soap Corp., 200 Sullivan St., Brooklyn
John T. Stanley Co., 642 W. 30th St., N. Y.
See page 67.
Swift & Co., Union Stock Yards, Chicago
Vasco Prods. Co., Elmira, N.Y.
Vliet Soap Co., 638 Monroe St., Brooklyn
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Chas. W. Young & Co., Phila.

SOAP PRESSES (see PRESSES)

SOAP SHEETS (Soap Paper)

Moore Bros. Co., 200 Hudson St., N.Y.
Rosefelt Sales Builders, 740 N. Plankinton Ave., Milwaukee, Wisc.

SOAP SLABBERS (see SOAP MACHINERY)

SOAP STOCK (Boiled down cotton soap stock, etc.)

(see also Brokers and Dealers)

T. G. Cooper & Co., 47 N. 2nd St., Phila.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago

SOAP STOCK (Cont'd)

Portsmouth Cotton Oil Refining Co., Portsmouth, Va.
Procter & Gamble Co., Cincinnati, O.
Snow Brokerage Co., 15 William St., N.Y.
See page facing 3rd cover.
Southern Cotton Oil Co., Produce Exchange, N.Y.
A. E. Staley Mfg. Co., Decatur, Ill.
G. A. Wharry & Co., 24 State St., N.Y.

SOAP, WHALE OIL (see WHALE OIL SOAP)

SOAPS, AUTO (see POTASH SOAPS)

SOAPS, FLOATING (see FLOATING SOAPS)

SOAPS, LIQUID (see POTASH SOAPS)

SOAPS, MEDICINAL, CAKE (see MEDICINAL SOAPS, CAKE)

SOAPS, MOTTLED (see MOTTLED SOAPS)

SOAPS, PINE SCRUB (see POTASH SOAPS)

SOAPS, SCOURING (see SCOURING SOAPS)

SOAPS, SCRUBBING (see POTASH SOAPS)

SOAPS, SURGICAL (see POTASH SOAPS)

SOAPS, TEXTILE (see TEXTILE SOAPS)

SODA ASH
(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Columbia Alkali Co., 30 Rockefeller Plaza, N.Y.
See page 20.
Diamond Alkali Co., 436—7th Ave., Pittsburgh
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 43.
Mathieson Alkali Wks., 60 E. 42nd St., N.Y.
Michigan Alkali Co., 60 E. 42nd St., N.Y.
Niagara Alkali Co., 9 E. 41st St., N.Y.
See page 49.
Solvay Sales Corp., 40 Rector St., N.Y.
See pages 64, 65.

SODA (Modified)
(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Columbia Alkali Co., 30 Rockefeller Plaza, N.Y.
See page 20.
Diamond Alkali Co., 436—7th Ave., Pittsburgh
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 43.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Mathieson Alkali Wks., 60 E. 42nd St., N.Y.
Mechling Bros. Chemical Co., Line St. & Coopers Creek, Camden, N.J.
Michigan Alkali Co., 60 E. 42nd St., N.Y.
Philadelphia Quartz Co., 121 S. 3rd St., Philadelphia, Pa.
Solvay Sales Corp., 40 Rector St., N.Y.
See pages 64, 65.

SODIUM BICARBONATE
(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Church & Dwight Co., 70 Pine St., N.Y.
Columbia Alkali Corp., 30 Rockefeller Plaza, N.Y.
See page 20.
Diamond Alkali Co., 436—7th Ave., Pittsburgh
E. I. du Pont de Nemours & Co., Wilmington, Del.
See page 27.
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 43.
Mathieson Alkali Works, 60 E. 42nd St., N.Y.
Mechling Bros. Chemical Co., Line St. & Coopers Creek, Camden, N.J.
Michigan Alkali Co., 60 E. 42nd St., N.Y.
Monsanto Chem. Co., 30 Rockefeller Plaza, N.Y.
Pennsylvania Salt Mfg. Co., Widener Bldg., Philadelphia
Victor Chem. Wks., 141 W. Jackson Blvd., Chicago, Ill.

SODIUM BICHROMATE
(see also Dealers)

Mutual Chemical Co., 270 Madison Ave., N.Y.
Natural Products Refining Co., 900 Garfield Ave., Jersey City, N. J.

SODIUM CARBONATE (see SODA ASH)

SODIUM CHOLATE (Bile Salt)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Digestive Ferments Co., Detroit
R. W. Greeff & Co., 10 E. 40th St., N. Y.
Wilson Labs., 4221 S. Western Ave., Chicago

SODIUM FLUORIDE (see FLUORIDES)

SODIUM FLUOSILICATE (see SODIUM SILICOFLUORIDE)

SODIUM HYDROSULFITE

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.

SODIUM HYDROSULFITE (Cont'd)

E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Dyestuffs Corp., 435 Hudson St., N.Y.
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila. **See pages 60, 61.**
Royce Chemical Co., Carlton Hill, N.J.

SODIUM HYPOCHLORITE (see CHLORINE, see LAUNDRY BLEACH)

SODIUM HYPOSULFITE (Thiosulfate)

E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Chem. Co., 40 Rector St., N.Y. **See page 35.**
A. R. Maas Chem. Co., 308 E. 8th St., Los Angeles
Mallinckrodt Chem. Wks., St. Louis.

SODIUM LAUYRL SULFATE (see SULFONATED FATTY ALCOHOLS)

SODIUM METAPHOSPHATE

Blockson Chemical Co., Joliet, Ill.
Calgon, Inc., Bowman Bldg., Pittsburgh
Victor Chem. Wks., 141 W. Jackson Blvd., Chicago

SODIUM METASILICATE

Cowles Detergent Co., 10525 Carnegie Ave., Cleveland
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Chem. Co., 40 Rector St., N.Y. **See page 35.**
Mechling Bros. Chemical Co., Camden, N.J.
Philadelphia Quartz Co., 121 So. 3rd St., Phila.
Standard Silicate Co., 1622 Koppers Bldg., Pittsburgh

SODIUM NAPHTHENATE

E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Dyestuffs Corp., 435 Hudson St., N.Y.
National Aniline & Chem. Co., 40 Rector St., N.Y.

SODIUM PERBORATE

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**

SODIUM SESQUICARBONATE

Diamond Alkali Co., 436—7th Ave., Pittsburgh
Mathieson Alkali Wks., 60 E. 42nd St., N.Y.
Mechling Bros. Chemical Co., Line St. & Coopers Creek, Camden, N.J.
Solvay Sales Corp., 40 Rector St., N.Y. **See pages 64, 65.**

SODIUM SESQUISILICATE

Philadelphia Quartz Co., 121 S. 3rd St., Phila.

SODIUM SILICATE

(see also Dealers)

E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Chemical Co., 40 Rector St., N.Y. **See page 35.**
Mechling Bros. Chem. Co., Camden, N. J.
Philadelphia Quartz Co., 121 S. 3rd St., Philadelphia
Standard Silicate Co., 2718 Koppers Bldg., Pittsburgh

SODIUM SILICOFLUORIDE

American-British Chem. Supplies, Inc., 180 Madison Ave., N.Y. **See page 9.**
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
American Fluoride Corp., 151 W. 19th St., N.Y.
Blockson Chemical Co., Joliet, Ill.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Merck & Co., Rahway, N. J.
Pfaltz & Bauer, Inc., 350—5th Ave., N.Y.

SOLVENT NAPHTHA

Barrett Co., 40 Rector St., N.Y. **See page 16.**
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
Deep Rock Oil Corp., 155 N. Clark St., Chicago
Wm. E. Jordan & Bro., 2590 Atlantic Ave., Brooklyn
Koppers Co., Koppers Bldg., Pittsburgh, Pa. **See page 2.**
Neville Chemical Co., Pittsburgh
Reilly Tar & Chem. Corp., P. O. Box 125, Indianapolis **See page 59.**
Shell Petroleum Corp., Shell Bldg., St. Louis

SOLVENTS, ORGANIC

Carbide & Carbon Chem. Corp., 30 E. 42nd St., N.Y.
Dow Chemical Co., Midland, Mich. **See page 26.**
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Koppers Co., Koppers Bldg., Pittsburgh, Pa. **See page 2.**
Neville Co., Pittsburgh
Sharples Solvents Corp., Phila.
Warner Chemical Co., 405 Lexington Ave., N.Y. **See page 73.**

SOLVENTS, PETROLEUM

American Mineral Spirits Co., 330 S. Michigan Ave., Chicago
Anderson-Pritchard Oil Co., Oklahoma City, Okla.
Deep Rock Oil Corp., 155 N. Clark St., Chicago
Skelly Oil Corp., 121 W. Wacker Drive, Chicago
Sinclair Refining Co., 630—5th Ave., N.Y.
L. Sonneborn Sons, 88 Lexington Ave., N.Y.
See page 66.

SOYA BEAN OIL

(see also Brokers and Dealers)

Balfour, Guthrie Co., 67 Wall St., N.Y.
Irving R. Boody & Co., 99 Wall St., N.Y.
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
William O. Goodrich Co., Milwaukee, Wis.
W. R. Grace & Co., 7 Hanover Sq., N.Y.
Spencer Kellogg & Son, Buffalo, N.Y.
Mitsubishi Shoji Kaisha, 120 Broadway, N.Y.
Mitsui & Co., 350—5th Ave., N.Y.
Murray Oil Products Co., 21 West St., N.Y.
Purina Mills, St. Louis
J. H. Redding Co., 17 Battery Pl., N.Y.
Smith-Weihman Co., 15 Moore St., N.Y.
See page 63.
Snow Brokerage Co., 15 William St., N.Y.
See page facing 3rd cover.
A. E. Staley Mfg. Co., Decatur, Ill.
A. E. Starkie Co., 1645 S. Kilburn Ave., Chicago
See page 68.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N.Y.
See page 75.

SPERMACETI

E. A. Bromund Co., 258 Broadway, N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Innis, Speiden & Co., 117 Liberty St., N.Y.
See page 43.
George H. Lincks, 123 Front St., N.Y.
Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago, Ill.
Orbis Products Corp., 215 Pearl St., N.Y.
See page 4.
L. A. Salomon & Bro. 216 Pearl St., N.Y.
Werner G. Smith Co., 2191 W. 110th St., Cleveland
Smith & Nichols, 121 Maiden Lane, N.Y.
Strohmeyer & Arpe Co., 139 Franklin St., N.Y.
Will & Baumer Candle Co., Syracuse, N.Y.

SPONGES

Allied Industrtial Prods. Co., 17 N. Elizabeth St., Chicago
American Sponge & Chamois Co., 47 Ann St., N.Y.
American Standard Mfg. Co., 2509 Lime St., Chicago
Atlas Sponge Co., 291 Church St., N.Y.
Florida Sponge & Chamois Co., 42 Cliff St., N.Y.
Great Eastern Sponge & Chamois Co., 833 N. Catt. Pk. Ave., Baltimore
James H. Rhodes & Co., 157 Austin Ave., Chicago
Robinson Sponge Co., 1727 Atlantic Ave., Brooklyn

SPOTTING FLUIDS (see CLEANING FLUIDS)

SPRAY PERFUMES (see PERFUMING COMPOUNDS)

SPRAY POWDERS (see SOAP POWDERS)

SPRAYERS, COMPRESSED AIR

Acmeline, Inc., Traverse City, Mich.
Binks Mfg. Co., 3114 Carroll Ave., Chicago
Breuer Electric Mfg. Co., 852 Blackhawk St., Chicago
See page 17.
E. C. Brown Co., Rochester, N.Y.
De Vilbiss Co., Toledo, O.
Dobbins Mfg. Co., North St. Paul, Minn.
See page 25.
Electric Sprayit Co., 220 N. Broadway, Milwaukee, Wisc.
Fumeral Co., Racine, Wisc.
See page 34.
Hudson Mfg. Co., 589 E. Illinois St., Chicago
See page 42.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Lowell Sprayer Co., North Pier Terminal, Chicago
D. B. Smith & Co., Utica, N.Y.
Simmons Paint Spray Brush Co., Dayton, O.

SPRAYERS, ELECTRIC

Binks Mfg. Co., 3114 Carroll Ave., Chicago
Breuer Electric Mfg. Co., 852 Blackhawk St., Chicago
See page 17.
Dobbins Mfg. Co., North St. Paul, Minn.
See page 25.
Electric Sprayit Co., 220 N. Broadway, Milwaukee, Wisc.
Hudson Mfg. Co., 589 E. Illinois St., Chicago
See page 42.
Lowell Sprayer Co., North Pier Terminal, Chicago
Metal Specialties Mfg. Co., 3208 Carroll Ave., Chicago
D. B. Smith Co., Utica, N.Y.

SPRAYERS, ELECTRIC STEAM

Edelman Co., 6249 S. St. Lawrence Ave., Chicago
Electric Sprayit Co., 220 N. Broadway, Milwaukee, Wisc
Fumeral Co., Racine, Wisc.
See page 34.
Kaz Mfg. Co., 369 Lexington Ave., N.Y.

SPRAYERS, for Powders (see Bellows)

SPRAYERS, HAND

Acmeline, Inc., Traverse City, Mich.
E. C. Brown Co., Rochester, N.Y.
Continental Can Co., 100 E. 42nd St., N.Y. **See page 22.**
Dobbins Mfg. Co., North St. Paul, Minn. **See page 25.**
Electric Sprayit Co., 220 N. Broadway, Milwaukee, Wisc.
Hudson Mfg. Co., 589 E. Illinois St., Chicago **See page 42.**
Jaeckh Mfg. Co., Cincinnati
Lowell Sprayer Co., North Pier Terminal, Chicago
D. B. Smith Co., Utica, N.Y.
Volume Sprayer Mfg. Co., Tulsa

SPRAYERS, MOUTH

H. D. Hudson Mfg. Co., 589 E. Illinois St., Chicago **See page 42.**
Lowell Sprayer Co., North Pier Terminal, Chicago
D. B. Smith & Co., Utica, N.Y.

SQUILLS (Rodent Poison)

J. L. Hopkins & Co., 220 Broadway, N.Y.
McLaughlin Gormley King Co., 1715—5th St., S. E., Minneapolis, Minn.
Murray & Nickell Mfg. Co., 2608 Arthington St., Chicago
S. B. Penick & Co., 132 Nassau St., N.Y. **See page 51.**
John Powell & Co., 114 E. 32nd St., N.Y. **See pages 54, 55.**
R. J. Prentiss & Co., 100 Gold St., N.Y. **See page 56.**
Ratin Laboratory, 116 Broad St., N.Y.

STANNOUS CHLORIDE (see TIN CRYSTALS)

STARCH

(see also Dealers)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Arabol Mfg. Co., 110 E. 42nd St., N.Y.
Chicago Starch Co., 2708 S. Throop St., Chicago
T. G. Cooper & Co., 47 N. 2nd St., Phila.
A. C. Drury & Co., 219 E. N. Water St., Chicago
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **Inside Back Cover**
Keever Starch Co., Columbus, O.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
National Adhesives Corp., 820 Greenwich St., N.Y.
Orbis Products Corp., 215 Pearl St., N.Y. **See page 4.**
A. E. Staley Mfg. Co., Decatur, Ill.

STEAM SPRAYERS (see SPRAYERS, ELECTRIC, STEAM)

STEARATES (Zinc, Calcium, Magnesium, etc.)

(see also Dealers)

Franks Chem. Prods. Co., 55—33rd St., Brooklyn
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Mallinckrodt Chem. Wks., St. Louis
Metasap Chemical Co., Harrison, N. J.
National Oil Products Co., Harrison, N. J.
M. W. Parsons, Inc., 55 Ann St., N.Y.

STEARIC ACID

(see also Brokers and Dealers)

American-British Chem. Supplies, Inc., 180 Madison Ave., N.Y. **See page 9.**
Celina Stearic Acid Co., Celina, Ohio
Century Stearic Acid Candle Wks., 22 E. 40th St., N.Y.
Darling & Co., 4201 S. Ashland Ave., Chicago
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
A. Gross & Co., 122 E. 42nd St., N.Y.
Harkness & Cowing, Ivorydale, Cincinnati
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Orbis Products Corp.., 215 Pearl St., N.Y. **See page 4.**
Procter & Gamble Co., Cincinnati
Smith-Weihman Co., 15 Moore St., N.Y. **See page 63.**
Theobald Animal By-Products Co., Kearny, N.J.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
M. Werk Co., St. Bernard, Cincinnati
Will & Baumer Candle Co., Syracuse, N.Y.
Wilson-Martin Co., Snyder Ave. & Swanson St., Philadelphia
Wishnick-Tumpeer, Inc., 295 Madison Ave., N.Y.

STEARINE

(see also Brokers and Dealers)

Celina Stearic Acid Co., Celina, Ohio
Darling & Co., 4201 S. Ashland Ave., Chicago
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Emery Industries, Inc., 4300 Carew Tower, Cincinnati
Independent Mfg. Co., Bridesburg P. O., Phila.
Morris & Co., Union Stock Yards, Chicago
Procter & Gamble Co., Cincinnati
Smith-Weihman Co., 15 Moore St., N.Y. **See page 63.**
Snow Brokerage Co., 15 William St., N.Y. **See page facing 3rd cover.**
Louis Stern Sons, Inc., Produce Exch., N.Y.
Swift & Co., Union Stock Yards, Chicago
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilson & Co., 4100 Ashland Ave., Chicago

STEEL DRUMS (see DRUMS, STEEL)

STEEL PAILS (see PAILS, STEEL)

STEEL, NICKEL CLAD

Illinois Steel Co., 208 S. La Salle St., Chicago
International Nickel Co., 67 Wall St., N. Y. C.
Lukens Steel Co., Coatesville, Pa.
Republic Steel Corp., Republic Bldg., Cleveland, O.

STEEL TANKS (see TANKS, STEEL)

STEEL WOOL

Allied Industrial Products Co., 19 N. Elizabeth St., Chicago
American Steel Wool Mfg. Co., 42-24 Orchard St., L. I. City, N.Y.
International Steel Wool Co., Springfield, Ohio
James H. Rhodes & Co., 153 W. Hubbard St., Chicago
Whiskette Co., Terre Hill, Pa.

STORAGE TANKS (see TANKS, STORAGE, etc.)

SULFONATED OILS

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Kali Mfg. Co., 1408 N. Front St., Philadelphia
National Oil Products Co., Harrison, N. J.
Paper Makers Chemical Corp., Kalamazoo, Mich.
Richards Chemical Works, Jersey City, N.J.
Sandoz Chemical Works, 61 Van Dam St., N.Y.
L. Sonneborn Sons, Inc., 88 Lexington Ave., N.Y. **See page 66.**
Wecoline Prods. Co., 15 E. 26th St., N.Y.
Jacques Wolfe & Co., Passaic, N.J.

SULFONATED FATTY ALCOHOLS

Carbide & Carbon Chemicals Corp., 30 E. 42nd St., N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Dyestuffs Corp., 435 Hudson St., N.Y.
Hummel Chemical Co., 90 West St., N.Y.
Michel Export Co., 95 Broad St., N.Y.
National Aniline & Chem. Co., 40 Rector St., N.Y.
Procter & Gamble Co., Cincinnati
R. F. Revson Co., 91—7th Ave., N.Y.
Sandoz Chemical Works, 61 Van Dam St., N.Y.
Jacques Wolfe & Co., Passaic, N.J.

SULFOXYLATES (Soap Bleaches)

Rohm & Haas Co., Inc., 222 W. Washington Sq., Phila. **See pages 60, 61.**
Jacques Wolfe & Co., Passaic, N.J.

SULFUR CANDLES

White Tar Co., Kearny, N. J. **See page 2.**

SUPERFATTING AGENTS

Pfaltz & Bauer, 350—5th Ave., N.Y.
Pylam Products Co., 799 Greenwich St., N.Y. **See page 58.**
Welch, Holme & Clark Co., Inc., 563 Greenwich St., N.Y.

SUPERHEATERS

Eureka Machine Co., 2601 Vega Ave., Cleveland
William Garrigue & Co., 9 S. Clinton St., Chicago
Ernest Scott & Co., Fall River, Mass.
The Superheater Co., 17 E. 42nd St., N.Y.
Wurster & Sanger, 5201 Kenwood Ave., Chicago

SURGICAL SOAPS (see POTASH SOAPS)

SWEEPING COMPOUNDS

Baums Castorine Co., 200 Mathews St., Rome, N.Y.
Champion Mfg. Co., 322 S. Erie St., Indianapolis, Ind.
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Creco Co., Inc., Creco Bldg., Long Island City, N.Y.
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
Globe Sanitary Supply Co., 2249 E. 38th St., Los Angeles
Hubman Supply Co., 225 N. 4th St., Columbus, O.
North Coast Soap & Chem Wks., Seattle, Wash.
Pacific Chem. Co., 1421 N. Main St., Los Angeles
Palmer Products, Inc., Waukesha, Wis.
Pioneer Mfg. Co., Cleveland, O.
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Sanco Prods. Inc., Greenville, O.
Solshine Mfg. Co., 44 Brookline St., Cambridge, Mass.
Sweeping Compound Mnfrs. Co. of N. Y., 421 Broome St., N.Y.
Uncle Sam Chemical Co., 329 E. 29th St., N.Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

TALC

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Binney & Smith Co., 41 E. 42nd St., N.Y.
Blue Ridge Talc Co., Henry, Va.
Chas. B. Chrystal Co., 11 Park Place, N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago
Eastern Magnesia Talc Co., Burlington, Vt.
Fezandie & Sperrle, 205 Fulton St., N.Y.
Georgia Talc Co., Asheville, N. C.
Goris & Arnstein, 37th & Racine Ave., Chicago
Hammill & Gillespie, 225 Broadway, N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Los Angeles Talc Co., Los Angeles, Cal.
Charles Mathieu, Inc., 120 Liberty St., N.Y.
Natural Products Co., 307 W. 8th St., Los Angeles
Orbis Products Corp., 215 Pearl St., N.Y. **See page 4.**

TALC (Cont'd)

Pacific Coast Talc Co., Los Angeles, Cal.
L. A. Salomon & Bro., 216 Pearl St., N.Y.
E. M. Sergeant Pulp & Chemical Co., 350—5th Ave., N.Y.
A. E. Starkie Co., 1645 S. Kilburn Ave., Chicago
See page 68.
Union Talc Co., 147 Nassau St., N.Y.
Welch, Holme & Clark Co., Inc., 563 Greenwich St., N.Y.
Whittaker, Clark & Daniels, 260 Broadway, N.Y.
Wishnick-Tumpeer, Inc., 295 Madison Ave., N.Y.

TALLOW

(see also Brokers and Dealers)

Armour & Co., 1355 W. 31st St., Chicago
See page 12.
Belleville Rendering Co., Belleville, Ill.
Consolidated Rendering Co., 40 N. Market St., Boston
Cudahy Packing Co., 111 W. Monroe St., Chicago
Darling & Co., 4201 So. Ashland Ave., Chicago
Eastern Industries, Inc., Ridgefield, N. J.
Independent Mfg. Co., Bridesburg P. O., Phila.
Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn
Louisville Butchers' Hide & Tallow Co., Louisville, Ky.
J. H. Redding Inc., 17 Battery Place, N.Y.
Snow Brokerage Co., 15 William St., N.Y.
See page facing 3rd cover.
Louis Stern Sons, Inc., Produce Exchange, N.Y.
Swift & Co., Union Stock Yards, Chicago
Theobald Animal By-Products Co., Kearny, N.J.
Toledo Tallow Co., Toledo, Ohio
Waltham Tallow Co., Waltham, Mass.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilbur-Ellis Co., 17 Battery Pl., N.Y.
See page 75.
Wilson & Co., Union Stock Yards, Chicago
Wilson-Martin Co., Swanson St., Phila.

TALLOW CHIP SOAP **(see CHIP SOAPS)**

TALLOW OIL

(see also Brokers and Dealers)

Armour & Co., 1355 W. 31st St., Chicago
See page 12.
Consolidated Rendering Co., 40 N. Market St., Boston
Cudahy Packing Co., 111 W. Monroe St., Chicago
Independent Mfg. Co., Bridesburg P. O., Phila
Louis Stern Sons, Inc., Produce Exchange, N.Y.
Toledo Tallow Co., Toledo, O.
Waltham Tallow Co., Waltham, Mass.
Welch, Holme & Clark Co., 563 Greenwich St., N.Y.
Wilson & Co., Union Stock Yards, Chicago

TANKS (Glass Lined Mixing and Storage)

Alsop Engineering Corp., 17 W. 60th St., N.Y.
See page 6, 7.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used)
See page 21.
Edge Moor Iron Wks., 30 Rockefeller Plaza, N.Y.
Ertel Engineering Corp., 120 E. 16th St., N.Y.
See page 29.
Metal Glass Products Corp., Belding, Mich.
Mixing Equipment Co., 1024 Garson Ave., Rochester, N.Y.
Newman Tallow & Soap Machy Co., 1051 W. 35th St., Chicago (Used)
See page 48.
Pfaudler Co., 89 East Ave., Rochester, N.Y.
Scientific Filter Co., 1 Franklin Sq., N.Y.

TANKS (for Liquid Soap Dispensing Systems)

Bobrick Chemical Corp., 111-117 Garey St., Los Angeles
Bobrick Dispenser Co., 215—4th Ave., N.Y.
Brighton Copper Works, 2163 Western Ave., Cincinnati
Clifton Chemical Co., 247 Front St., N.Y.
See page 19.
Eagle Soap Corp., Huntington, Ind.
See page 28.
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Moore Brothers Co., 200 Hudson St., N.Y.
Palmer Prods., Inc., Waukesha, Wis.
John Trageser Steam Copper Works, Grand Ave., Maspeth, L. I., N.Y.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

TANKS (Steel Mixing and Storage)

Alloy Prods. Corp., 221 Madison St., Waukesha, Wisc.
Alsop Engineering Corp., 17 W. 60th St., N.Y.
See pages 6, 7.
S. F. Bowser & Co., 1300 E. Creighton Ave., Ft. Wayne, Ind.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used)
See page 21.
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Edge Moor Iron Wks., 30 Rockefeller Plaza, N.Y.
Wm. Garrigue & Co., 9 S. Clinton St., Chicago
Graver Tank & Mfg. Corp., 28 E. Jackson Blvd., Chicago
Houchin Machinery Co., Hawthorne, N.J.
See page 40.
Huber Mach. Co., 259—46th St., Brooklyn
See page 41.
Illinois Steel Corp., 208 S. LaSalle St., Chicago
Lancaster Iron Works, 564 S. Prince St., Lancaster, Pa.
J. M. Lehmann Co., 248 W. Broadway, N.Y.
Littleford Bros., 451 E. Pearl St., Cincinnati
Lukens Steel Corp., Coatesville, Pa.
Mixing Equipment Co., 1024 Garson Ave., Rochester, N.Y.
Newman Tallow & Soap Machinery Co., 1051 W. 35th St., Chicago
See page 48.
Patterson Foundry & Machine Co., East Liverpool, Ohio

TANKS (Steel Mixing and Storage) (Cont'd)

Petroleum Iron Works, Sharon, Pa.
Pfaudler Co., Rochester, N.Y.
Pioneer Tank & Boiler Co., Tulsa, Okla.
Struthers-Wells Co., Warren, Pa.
John Trageser Steam Copper Works, Grand St., Maspeth, L. I., N.Y.

TANKS (Wooden Mixing and Storage)

Atlantic Tank & Barrel Co., North Bergen, N. J.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. H. Day Co., 1144 Harrison Ave., Cincinnati
General Tank Corp., 30 Church St., N.Y.
Hauser-Stander Tank Co., Ivorydale, Cinn.
Kalamazoo Tank & Silo Co., Kalamazoo, Mich.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
New England Tank & Tower Co., Everett, Mass.
Pacific Tank & Pipe Co., 334 Market St., San Francisco
Tippett & Wood, Phillipsburg, N. J.

TAR ACID OIL (see COAL TAR RAW MATERIALS)

TAR ACIDS, High-Boiling

American-British Chem. Supplies, Inc., 180 Madison Ave., N.Y. **See page 9.**
Barrett Co., 40 Rector St., N. Y. **See page 16.**
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
Koppers Co., Koppers Bldg., Pittsburgh, Pa. **See page 2.**
Monsanto Chemical Co., St. Louis
Reilly Tar & Chem. Co., Indianapolis **See page 59.**

TERPENELESS OILS (see ESSENTIAL OILS)

TERPENYL ACETATE (see AROMATIC CHEMICALS)

TERPINEOL

(see also Essential Oils)

Aromatic Products, Inc., 15 E. 30th St., N.Y. **See page 13.**
Dodge & Olcott Co., 180 Varick St., N.Y.
P. R. Dreyer Inc., 12 E. 12th St., N.Y.
Firmenich & Co., 135—5th Ave., N.Y.
Fritzsche Brothers, Inc., 76 Ninth Ave., N.Y.
Givaudan-Delawanna, Inc., 80—5th Ave., N.Y. **See inside front cover, 37.**
Pfaltz & Bauer, Inc., 350—5th Ave., N.Y.
Schimmel & Co., 601 W. 26th St., N.Y.
Ungerer & Co., 13 W. 20th St., N.Y. **See page facing front cover, 71.**

TETRACHLORETHYLENE (see SOLVENTS, ORGANIC)

TETRALIN

E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**

TEXTILE SOAPS

Armour Soap Wks., 1355 W. 31st St., Chicago **See page 12.**
J. O. Draper Co., Pawtucket, R. I.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Enterprise Mill Soap Wks., 2231 N. 12th St., Philadelphia
Arnold Hoffman & Co., Providence, R. I.
Iowa Soap Co., 810 Valley St., Burlington, Ia.
H. Kohnstamm & Co., 91 Park Pl., N.Y.
Laurel Soap Mfg. Co., Tioga St., Phila.
Long Island Soap Co., Meeker Ave., & Bridgewater St., Bklyn., N.Y.
Los Angeles Soap Co., Los Angeles, Cal.
Geo. E. Marsh Co., 200 Broadway, Cambridge, Mass.
National Oil Products Co., Harrison, N.J.
National Soap Co., 357 South 25th St., Tacoma, Wash.
Newell Gutradt & Co., 350 Fremont St., San Francisco
Peck's Products Co., St. Louis, Mo.
Procter & Gamble Co., Cincinnati
Rome Soap Mfg. Co., Rome, N.Y.
Sandoz Chemical Works, 61 Van Dam St., N.Y.
Scholler Bros., 3301 Amber St., Philadelphia
Geo. E. Sherman Co., 153 Classon Ave., Brooklyn, N.Y.
Swift & Co., Union Stock Yards, Chicago
Ultra Chem. Wks., Inc., Kitay Bldg., Paterson, N. J.
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Jacques Wolf & Co., Passaic, N. J.
Chas. W. Young & Co., 1247 N. 26th St., Phila.

TEXTILE SODA (see SODA)

THALLIUM SULFATE (Rat Poisons)

American Fluoride Corp., 151 W. 19th St., N.Y.
Foote Mineral Co., 1609 Summer St., Phila.
Hugo Falck & Co., 25 Broadway, N.Y.
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Lethelin Products Co., Manhasset, N.Y.
Ore & Chemical Corp., 40 Rector St., N.Y.
Pfaltz & Bauer, Inc., 350—5th Ave., N.Y.

THEATRE SPRAY BASES (see PETROLEUM BASES)

THEATRE SPRAY PERFUMES (see PERFUMING COMPOUNDS)

THEATRE SPRAYS

Antiseptol Co., 5524 Northwest Highway, Chicago
Baums Castorine Co., 200 Mathew St., Rome, N.Y.

THEATRE SPRAYS (Cont'd)

Chemical Compounding Corp., 262 Huron St., Brooklyn
Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Churchill Mfg. Co., 309 Douglas St., Sioux City, Ia.
Clifton Chemical Co., 247 Front St., N.Y. **See page 19.**
Delta Chemical Co., 1815 Riverside Drive, N.Y.
Eagle Soap Corp., Huntington, Ind. **See page 28.**
Florasynth Laboratories, 1513 Olmstead Ave., Bronx, N.Y.
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
Globe Sanitary Supply Co., 2249 E. 38th St., Los Angeles
James Good, Inc., Kensington, Philadelphia **See page 38.**
Goulard & Olena, 140 Liberty St., N.Y.
Hockwald Chemical Co., 436 Bryant St., San Francisco
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Hunt Mfg. Co., Lisbon Rd., Cleveland
Jansen Soap & Chem. Co., 324 Leavenworth St., San Francisco
Marshall Prods., Inc., 806 N. 1st St., St. Louis
Palmer Products, Inc., Waukesha, Wis.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Selig Co., 336 Marietta St., Atlanta, Ga.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago
V. C. Products Co., Philadelphia
World Spray Co., Inc., 5117 Central Ave., Los Angeles

THERMOMETERS (see INSTRUMENTS)

THYME OIL (see ESSENTIAL OILS)

THYMOL (see AROMATIC CHEMICALS)

TIGHT WRAPPING MACHINERY (see WRAPPING MACHINERY)

TIN CRYSTALS (Stannous Chloride)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
J. T. Baker Chem. Co., Phillipsburg, N. J.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Chemical Co., 40 Rector St., N.Y. **See page 35.**
Metal & Thermit Corp., 120 Broadway, N.Y.

TITANIUM OXIDE (for toilet soaps)

Titanium Pigment Co., 111 Broadway, N.Y.
Chemical & Pigment Co., St. Helena, Baltimore
Wishnick-Tumpeer, Inc., 295 Madison Ave., N.Y.
Foote Mineral Co., Philadelphia

TOILET GOODS (see TOILET PREPARATIONS)

TOILET GOODS COLORS (see COLORS)

TOILET PAPER (see PAPER TOWELS)

TOILET PREPARATIONS

(see also Bath Salts, Shampoos, etc.)

Commercial Labs., Newark, N.Y. State
Ehrmann-Strauss Co., 200 W. Houston St., N.Y.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Shores Co., Cedar Rapids, Ia.
John T. Stanley Co., 642 W. 30th St., N.Y. **See page 67.**
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

TOILET SOAP BASE (for CAKES)

Armour Soap Wks., 1355 W. 31st St., Chicago **See page 12.**
Colgate-Palmolive-Peet Co., Jersey City, N.J.
Hewitt Soap Co., Dayton, O.
Holbrook Mfg. Co., 18th St., Jersey City, N. J.
Los Angeles Soap Co., Los Angeles, Cal.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Swift & Co., Chicago
John T. Stanley Co., 642 W. 30th St., N.Y. **See page 67.**
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

TOILET SOAP MILLS (see SOAP MACHINERY)

TOILET SOAPS (Cakes)

Armour Soap Wks., 1355 W. 31st St., Chicago **See page 12.**
Colgate-Palmolive-Peet Co., Jersey City, N.J.
J. Eavenson & Sons, Del. & Penn Sts., Camden, N. J.
Hewitt Soap Co., Dayton, O.
Larkin Co., Buffalo, N.Y.
Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.
Long Island Soap Co., Meeker Ave. & Bridgewater St., Bklyn., N.Y.
Los Angeles Soap Co., Los Angeles, Cal.
National Soap Co., Box 1613, Tacoma, Wash.
Newell, Gutradt Co., 350 Fremont St., San Francisco
North Coast Soap & Chem. Wks., Seattle, Wash.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis

TOILET SOAPS (Cakes) (Cont'd)

Procter & Gamble, Cincinnati
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
John T. Stanley Co., 642 W. 30th St., N.Y. **See page 67.**
Swift & Co., Chicago
Vliet Soap Co., 638 Monroe St., Brooklyn
Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.
M. Werk Co., St. Bernard, Cincinnati
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

TOOTH PASTE

Commercial Laboratories, Newark, N. Y. State
Ehrmann-Strauss Co., 200 W. Houston St., N.Y.
McKesson & Robbins, 79 Cliff St., N.Y
Geo. A. Schmidt Co., 236 W. North Ave., Chicago
Shores Co., Cedar Rapids, Ia.
Strong Cobb & Co., Cleveland
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

TOWELS, PAPER (see PAPER TOWELS)

TRICHLORBENZENE (see SOLVENTS, ORGANIC)

TRICHLORETHYLENE (see SOLVENTS, ORGANIC)

TRIETHANOLAMINE (see ETHANOLAMINE)

TRIPOLI

Allied Industrial Prods. Co., 17 N. Elizabeth St., Chicago
Barnsdall Tripoli Co., Seneca, Mo.
Chas. B. Chrystal Co., 11 Park Pl., N.Y.
Goris & Arnstein, 3700 Racine Ave., Chicago
K. F. Griffiths, 110 E. 42nd St., N.Y.
Hammill & Gillespie, 225 Broadway, N.Y.
Independent Gravel Co., Joplin, Mo.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
International Silica Co., Cairo, Ill.
Natural Products Co., 307 W. 8th St., Los Angeles
L. A. Salomon & Bro., 216 Pearl St., N.Y.
A. E. Starkie Co., 1645 S. Kilburn Ave., Chicago **See page 68.**
Tamms Silica Co., 228 N. La Salle St., Chicago
Whittaker, Clark & Daniels, Inc., 260 W. Broadway, N.Y.
Wishnick-Tumpeer, Inc., 295 Madison Ave., N.Y.

TRISODIUM PHOSPHATE
(see also Brokers and Dealers)

American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, N.Y.
Blockson Chemical Co., Joliet, Ill.
Bowker Chem. Co., 50 Church St., N.Y.
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
General Chemical Co., 40 Rector St., N.Y. **See page 35.**
Harshaw Chemical Co., 1945 E. 97th St., Cleveland
International Agricultural Corp., Atlanta, Ga.
A. R. Maas Chem. Co., 308 E. 8th St., Los Angeles
Monsanto Chemical Co., 1724 S. 2nd St., St. Louis
Phosphate Prods. Corp., Richmond, Va.
Victor Chemical Works, 141 W. Jackson Blvd., Chicago
Warner Chemical Co., 405 Lexington Ave., N.Y. **See page 73.**

TRUCKS (Portable)

American Car & Foundry Co., 30 Church St., N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. H. Day Co., 1144 Harrison Ave., Cincinnati
Fairbanks, Morse & Co., 900 S. Wabash St., Chicago
Houchin Machinery Co., Hawthorne, N.J. **See page 40.**
Huber Mach. Co., 265—46th St., Brooklyn **See page 41.**
G. B. Lewis Co., Watertown, Wis.
Schwenk Safety Device Corp., 80 Broad St., N.Y.
Self-Lifting Piano Truck Co., Findlay, Ohio

TUBE FILLING MACHINERY (see FILLING MACHINERY, TUBES)

TUBES (Collapsible)

Aluminum Company of America, Gulf Bldg., Pittsburgh, Pa.
Art Tube Co., Irvington, N. J.
Bond Penn Tube Co., 501 Monroe St. Wilmington, Del.
Consolidated Fruit Jar Co., New Brunswick, N. J.
Continental Can Co., 100 E. 42nd St., N.Y. **See page 22.**
Globe Collapsible Tube Corp., 28 Columbia Heights, Bklyn., N.Y.
Hygienic Tube Co., 34 Ave. L., Newark, N.J. (Celluloid)
National Collapsible Tube Co., Providence, R. I.
New England Collapsible Tube Co., New London, Conn.
Peerless Tube Co., Bloomfield, N. J.
Sun Tube Corp., Hillside, N. J.
Victor Metal Products Corp., Bklyn., N.Y.
White Metal Mfg. Co., 1012 Grand St., Hoboken, N. J.
A. H. Wirz, Inc., Chester, Pa.

TUBES, MAILING (see CANS, FIBRE)

TUBES (Transparent Celluloid)

Lusteroid Container Co., So. Orange, N.J.
Hygienic Tube Co., Newark, N.J.

TURPENTINE

American Turpentine & Tar Co., New Orleans, La.
Antwerp Naval Stores Co., Savannah, Ga.
General Naval Stores Co., 230 Park Ave, N.Y.
Guignon & Green, 17 Battery Pl., N.Y.
Hercules Powder Co., Wilmington, Del.
National Turpentine Pwds. Co., Gull Point, Fla.
Taylor, Lowenstein & Co., Mobile, Ala.
G. A. Wharry & Co., 24 State St., N.Y.

URINAL BLOCKS (see DEODORIZING BLOCKS)

USED MACHINERY

First Machinery Co., 419 Lafayette St., N.Y.
Consolidated Products Co., 15 Park Row, N.Y. **See page 21.**
Houchin Machinery Co., Hawthorne, N.J. **See page 40.**
Huber Machine Co., 259—46th St., Brooklyn, N.Y. **See page 41.**
J. M. Lehmann Co., 250 West Broadway, N.Y.
Machinery & Equipment Co., 225 Sherman Ave., Newark, N. J.
Newman Tallow & Soap Machinery Co., 1051 W. 35th St., Chicago **See page 48.**
Stein-Brill Corp., 183 Varick St., N.Y.
Stein Equipment Corp., 426 Broome St., N.Y.

VACUUM CLEANERS (Heavy Duty)

Breuer Electric Mfg. Co., 852 Blackhawk St., Chicago **See page 17.**
Fay Co., Madison Ave., N.Y.

VACUUM PUMPS (see PUMPS)

VALVES (Soap)

Alloy Prods. Corp., 221 Madison St., Waukesha, Wisc.
American Car & Foundry Co., 30 Church St., N.Y.
Foster Pump Works, Inc., 54 Washington St., Brooklyn
Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago
Palmer Products, Waukesha, Wis.
U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago

VANILLIN

(see also Essential Oils)

Fries Bros., 90 Reade St., N.Y.
Givaudan-Delawanna, Inc., 80—5th Ave., N.Y. **See inside front cover, 37.**
Maywood Chemical Co., Maywood, N.J.
Monsanto Chemical Works, 1724 S. 2nd St., St. Louis, Mo.
Verona Chemical Co., Verona Ave., Newark, N.J.

VAPORIZERS (see SPRAYERS, STEAM)

VATS (see TANKS)

VENDING MACHINES

Acme Cotton Products Co., 245—5th Ave., N.Y. (Sanitary Napkin)
Brown Co., Portland, Me. (Soap and Paper Towel)
Hospital Specialty Co., 41 Union Sq., N.Y. (Sanitary Napkin)
Rochester Germicide Co., Rochester (Sanitary Napkin)

VETIVERT OIL (see ESSENTIAL OILS)

VITAMIN F

Pharmaceutical Specialties Co., 233 Broadway, N.Y.

VOLCANIC ASH (see ABRASIVES and FILLERS)

WASHING COMPOUNDS (see CLEANING COMPOUNDS

WASHING MACHINERY (Bottles)

Alsop Engineering Corp., 17 W. 60th St., N.Y. **See pages 6, 7.**
Barry-Wehmiller Machinery Co., 4660 W. Florrisant Ave., St. Louis
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Karl Kiefer Machine Co., Cincinnati, O.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
F. J. Stokes Mach. Co., Philadelphia, Pa
U. S. Bottlers Machinery Co., 4025 N. Rockwell St., Chicago

WASHING MACHINERY (Drums and Barrels)

F. Aue & Co., 171 Beebe Ave., Long Island City, N.Y.
Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Eureka Machine Co., 2061 Vega Ave., Cleveland
Charles E. Farrington, Phoenixville, Pa.
Harnischfeger Corp., 4400 W. National Ave., Milwaukee
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Vol-U-Meter Co., 707 Ohio St., Buffalo

WASHING POWDERS (see CLEANING COMPOUNDS)

WATER SOFTENERS

Allied Industrial Prods. Co., 17 N. Elizabeth St., Chicago
American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.

WATER SOFTENERS (Cont'd)

Chemical Supply Co., 2450 Canal Rd., Cleveland
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
Hubman Supply Co., 225 N. 4th St., Columbus, O.
Jansen Soap & Chem. Co., 324 Leavenworth St., San Francisco
Kemiko Mfg. Co., 500 Chancellor Ave., Irvington, N. J.
Permutit Co., 330 W. 42nd St., N.Y.
Procter & Gamble Co., Cincinnati
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
Shores Co., Cedar Rapids, Ia.
Solvay Sales Corp., 40 Rector St., N.Y. **See pages 64, 65.**

WATER STILLS (Automatic)

International Filter Co., 59 East Van Buren St., Chicago
F. J. Stokes Machine Co., Tabor Rd., Phila., Pa.

WATERLESS CLEANSER (see HAND SOAP, MECHANICS')

WAX APPLICATORS

American Standard Mfg. Co., 2509 S. Green St., Chicago
Chicago Sanitary Prods. Co., 2526 W. Congress St., Chicago
Churchill Mfg. Co., 309 Douglas St., Sioux City, Ia.
Fay Co., 130 Madison Ave., N.Y.
Federal Varnish Co., 333 S. Peoria St., Chicago **See page 30.**
Franklin Research Co., 5134 Lancaster Ave., Phila.
Fuld Bros., 702 S. Wolfe St., Baltimore **See page 33.**
E. B. Moore & Co., 185 N. Wabash Ave., Chicago
Palmer Products, Inc., Waukesha, Wis.
Pioneer Mfg. Co., 3053 E. 87th St., Cleveland
Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago
H. F. Staples Co., Medford, Mass.

WAX, FLOOR, (see FLOOR WAX)

WAX POLISHES, (see POLISH, WAX)

WAXES (CARNAUBA, CANDELILLA, MONTAN, ETC., do not confuse with floor wax)

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
E. A. Bromund Co., 256 Broadway, N.Y.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
A. C. Drury & Co., 219 East North Water St., Chicago
Otto A. C. Hagen Co., 929 Ledger Bldg., Phila.
J. L. Hopkins & Co., 220 Broadway, N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
W. & A. Leaman, 17 State St., N.Y.
George H. Lincks, 123 Front St., N.Y.
Muench-Kreuzer Candle Co., Syracuse, N.Y.
Neumann-Buslee & Wolfe, 224 W. Huron St., Chicago
Orbis Products Corp., 215 Pearl St., N.Y. **See page 4.**
S. B. Penick & Co., 132 Nassau St., N.Y. **See page 51.**
R. J. Prentiss & Co., 100 Gold St., N.Y. **See page 56.**
R. F. Revson Co., 91 7th Ave., N.Y.
Frank B. Ross Co., 79 Wall St., N.Y.
L. A. Salomon & Bro., 216 Pearl St., N.Y.
E. M. Sergeant Pulp & Chemical Co., 350—5th Ave., N.Y.
Sherwood Petroleum Co., Bush Terminal Bldg., No. 1, Brooklyn, N.Y.
Strahl & Pitsch, 141 Front St., N.Y.
Strohmeyer & Arpe, 139 Franklin St., N.Y.
Smith-Weihman Co., 15 Moore St., N.Y. **See page 63.**
Will & Baumer Candle Co., Syracuse, N.Y.

WEIGHING EQUIPMENT (Automatic)

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. L. Ferguson Co., Joliet, Ill.
B. F. Gump Co., 431 S. Clinton St., Chicago
S. Howes Co., Silver Creek, N.Y.
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Pneumatic Scale Corp., Norfolk Downs, Mass. **See pages 52, 53.**
F. J. Stokes Machine Co., Phila., Pa.
Stokes & Smith Co., 4915 Summerdale Ave., Phila. **See page 69.**
Triangle Package Machinery Co., 910 Spaulding Ave., Chicago
Volumeter Co., 710 Ohio St., Buffalo, N.Y.

WHALE OIL

(see also Brokers and Dealers)

F. A. Marsily & Co., 15 Whitehall St., N.Y
Murray Oil Prods Co., 21 West St., N.Y.
J. H. Redding Co., 17 Battery Pl., N.Y.
Snow Brokerage Co., 15 William St., N.Y. **See page facing 3rd cover.**
Wilbur-Ellis Co., 17 Battery Pl., N.Y. **See page 75.**

WHALE OIL SOAPS

(see also Fish Oil Soaps)

James Good, Inc., Kensington, Philadelphia **See page 38.**
National Oil Products Co., Harrison, N. J.
National Soap Co., Box 1613, Tacoma, Wash.
Newell, Gutradt Co., 350 Fremont St., San Francisco
North Coast Chemical & Soap Works, Seattle, Wash.
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis
Procter & Gamble Co., Cincinnati

WHITE MINERAL OILS

S. Schwabacher & Co., 25 Beaver St., N.Y.
Sherwood Petroleum Co., Bush Terminal Bldg. No. 1, Brooklyn, N.Y.
L. Sonneborn Sons, 88 Lexington Ave., N.Y. **See page 66.**
Stanco, Inc., 2 Park Ave., N.Y.

WHITING

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Chas. B. Chrystal Co., 11 Park Pl., N.Y.
Columbia Alkali Co., 30 Rockefeller Plaza, N.Y. **See page 20.**
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Stanley Doggett, Inc., 75 Varick St., N.Y.
Goris & Arnstein, 37th & Racine Ave., Chicago
W. S. Gray Co., 342 Madison Ave., N.Y.
Hammill & Gillespie, 225 Broadway, N.Y.
Industrial Chem. Sales Co., Inc., 230 Park Ave., N.Y.
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Pittsburgh Plate Glass Co., Milwaukee, Wis.
Reliance Whiting Co., Alton, Ill.
George A. Rowley Co., 119 N. Broad St., Phila.
L. A. Salomon & Bro., 216 Pearl St., N.Y.
E. M. Sergeant Pulp & Chemical Co., 350—5th Ave., N.Y.
Geo. B. Smith Chem. Works, Springfield, Ill.
Wishnick-Tumpeer, Inc., 295 Madison Ave., N.Y.

WOOL GREASE

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Bopf-Whittam Corp., Westfield, N. J.
T. G. Cooper & Co., 47 N. 2nd St., Phila.
A. C. Drury & Co., 219 E. N. Water St., Chicago
Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago
Hummel Chemical Co., 90 West St., N.Y.
W. L. Jacobs, Sperry Bldg., Brooklyn, N.Y.
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Lanatex Prods. Sales Corp., Box 52, Station Q, Elizabeth, N. J.
W. L. Montgomery & Co., 89 Beach St., Boston
Pfaltz & Bauer, Inc., 350 5th Ave., N.Y.

WRAPPING MACHINERY (Cake Soaps)

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Johnson Automatic Sealer Co., Battle Creek, Mich.
J. M. Lehmann Co., 250 West Broadway, N.Y.
Miller Wrapping & Sealing Mach. Co., 16 S. Clinton St., Chicago
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Package Machinery Co., 132 Bernie Ave., Springfield, Mass.
F. B. Redington Co., 112 S. Sangamon St., Chicago
Aurelio Tanzi Engineering Co., 235—4th Ave., N.Y.

WRAPPING MACHINERY (Tight Wrapping)

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Pneumatic Scale Corp., Norfolk Downs, Mass. **See pages 52, 53.**
Stokes & Smith Co., 4915 Summerdale Ave., Phila. **See page 69.**

WRAPPING MACHINERY (Wax)

Consolidated Prods. Co., 15 Park Row, N.Y. (Used) **See page 21.**
J. L. Ferguson Co., Joilet, Ill.
Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich.
J. M. Lehmann Co., 250 West Broadway, N.Y.
Miller Wrapping & Sealing Mach. Co., 16 S. Clinton St., Chicago
Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used) **See page 48.**
Package Machinery Co., 132 Bernie Ave., Springfield, Mass.
Pneumatic Scale Corp., Norfolk Downs, Mass. Chicago **See pages 52, 53.**
F. B. Redington Co., 112 S. Sangamon St., Chicago

XYLENOL

Barrett Co., 40 Rector St., N.Y. **See page 16.**
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh
Koppers Co., Koppers Bldg., Pittsburgh, Pa. **See page 2.**
Reilly Tar & Chemical Corp., Indianapolis, Ind. **See page 59.**

YLANG YLANG OIL **(see ESSENTIAL OILS)**

ZINC OXIDE

American Cyanamid & Chem. Corp., 30 Rockefeller Plaza, N.Y.
Anaconda Sales Co., E. Chicago, Ind.
J. T. Baker Chem. Co., Phillipsburg, N. J.
Chas. B. Chrystal Co., 11 Park Pl., N.Y.
A. C. Drury & Co., 219 East North Water St., Chicago
E. I. du Pont de Nemours & Co., Wilmington, Del. **See page 27.**
Eagle-Picher Lead Co., 134 N. La Salle St., Chicago
Harshaw Chem. Co., Cleveland
Innis, Speiden & Co., 117 Liberty St., N.Y. **See page 43.**
Jungmann & Co., 157 Chambers St., N.Y. **See inside back cover.**
Mallinckrodt Chemical Works, St. Louis, Mo.
Merck & Co., Rahway, N.J.
New Jersey Zinc Co., 160 Front St., N.Y.
Orbis Products Corp., 215 Pearl St., N.Y. **See page 4.**
L. A. Salomon & Bro., 216 Pearl St., N. Y.
Western Zinc Oxide Co., Leadville, Col.

ZINC STEARATE **(see STEARATES)**

Memoranda

Memoranda

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Appendix

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BLUE BOOK and CATALOG
for the Soap, Insecticide, Disinfectant
and Allied Industries
for 1937

■

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A Soap Market Surveyed

A SWITCH from package soap flakes and chips to granulated soap and soap beads is one of the most important changes in soap buying habits disclosed by a recent survey of the Milwaukee market conducted by the *Milwaukee Journal*. The survey is based on a series of personal interviews with a selected list of consumers and is made annually by this well-known newspaper. The findings in the latest survey are published under the title "Consumer Analysis of the Greater Milwaukee Market for 1936." The increase in use of soap beads and granulated soaps, besides replacing the soap flake and chip to a certain extent, also seems to be pushing the white laundry bar farther into the background to judge from the report. Sale of the brown laundry bar seems not to have been so much affected. Soap crystals and water softeners have also declined in use over the past year, having been replaced in many families by the growth in popularity of granules and beads.

No noteworthy changes in the toilet soap field are revealed by the latest report. Of the total Milwaukee population, almost 99 per cent continue to be regular users of toilet soap, with an average consumption of 5.6 cakes per family each month. This is a drop from the 6 cake average monthly consumption reported in the previous year, but is about on a par with reported consumption in 1930, 1931 and 1934. This seems to indicate that the figure for 1935 was abnormally high, induced no doubt by the low prices prevailing on soap through the early part of the year. Housewives reported the use of six less brands in 1936 than in the previous year, bringing the total down from 86 to 80. "Lux" toilet soap continues to lead the sales parade with a duplicate of its 1935 record of use by 29 per cent of the Milwaukee families. "Palmolive" holds second position with 25.5 per cent and "Lifebuoy" remains a close third with a mark of 24.9 per cent. The following table shows the percentage of families using each brand as of January, 1936, 1935 and 1934.

Toilet Soaps

Brand	1936 %	1935 %	1934 %
Lux	29.0	29.0	21.6
Palmolive	25.5	26.2	22.5
Lifebuoy	24.9	24.3	29.5
Camay	13.0	12.4	9.2
Ivory	12.1	11.8	12.7
Woodbury	2.0	2.4	1.3
Colgate's Cash. Bou.	1.8	...	...
Gimbel's Hardwater	1.8	3.4	5.3
Miscellaneous	8.0	8.9	9.1

(Where the figure was less than 1 per cent a blank appears.)

THIS consumer analysis of an important soap market gives a number of interesting figures from which conclusions can be drawn as to trends in the soap buying habits of consumers all over the United States. Of particular interest are the figures showing average monthly consumption of the various types of soap products.

A drop was noted in use of package soap flakes and chips in 1936. Where in 1935 82.3 per cent of all families in the district used products of this type, the percentage fell to 75.8 per cent in 1936. The average consumption per month by families using this type soap remained the same—2½ packages. Although the demand for package soap flakes or chips is apparently less than a year ago, due to the growing popularity of beads and granules, there are more brands being offered in the Milwaukee market —75 as against 72 a year ago. The leading seller is still a local product, "John Hanser," which is used by 36.4 per cent of all families. "Lux" holds second position with 25.7 per cent and "Chipso" is again third with 14.7 per cent. The following table shows percentage of families according to soap chip consumption. (Figures of less than 1 per cent omitted.)

Soap Flakes and Chips

Brand	1936 %	1935 %	1934 %
Hanser	36.4	38.0	36.5
Lux	25.7	25.6	19.5
Chipso	14.7	14.9	20.0
Clean Quick	10.9	10.4	11.8

Ivory	10.8	8.7	7.0
Crystal White	4.1	3.2	2.6
Schuster's White World	1.9	1.9	1.5
Fom	1.6	3.1	...
American Family	1.4	1.3	1.1
Miscellaneous	7.7	10.5	10.9

The percentage and number of Milwaukee families using white laundry soap continues to drop. Only 57.3 per cent report use of white bars in 1936 as against 57.9 per cent a year previous. Average consumption per family also dropped—from 6 bars per month in 1935 to 5.8 bars in 1936. The number of brands in common use, on the other hand, has increased to 31 from the 28 figure of 1935. "P. & G." continues to be the leading seller, with a percentage of 51.6, "Crystal White" holds second place again with 28.7 per cent, and "Ivory" is again in third place with 17.1 per cent.

Consumption of brown laundry soap showed a percentage gain, with 65.7 per cent of all families using the brown bars as against 64.7 per cent in 1935. Monthly consumption per family remained the same at 5.7 bars. The number of brands offered in the Milwaukee market was lower in 1936, the total being 30 as against 36 in 1935. "Fels-Naptha" continues to head the list with a high figure of 70.6 per cent. "O. K." is again second with 19.2 per cent and "American Family" third with 5.5 per cent. The following tables show the percentages for both groups of bar soaps.

White Laundry Bar Soap

Brand	1936 %	1935 %	1929 %
P. & G.	51.6	52.9	56.9
Crystal White	28.7	27.5	18.8
Ivory	17.1	13.9	7.2
Hanser's	1.4	2.1	...
Kirk's	1.4	2.8	15.2
Miscellaneous	2.6	3.4	3.5

Yellow Laundry Bar Soap

Brand	1936 %	1935 %	1929 %
Fels-Naptha	70.6	65.0	67.4
O. K.	19.2	18.5	...
American Family	5.5	6.3	8.7
Star	2.6	4.7	23.7
Hanser's	2.0	4.8	...
Miscellaneous	2.4	3.1	1.4

The number of families using granulated soap or soap beads has shown a significant increase. It seems many Milwaukee families have switched over to products of this type and have discontinued use of such products as package soap flakes or chips, soap crystals or water softeners, and washing powders. In January, 1935, 56.2 per cent of all Milwaukee families were using granulated soap or soap beads. In January, 1936, this percentage had increased to 67.7 per cent. Not only are more families using these products, but the average consumption per family has advanced substantially. Where in 1935 the average monthly consumption was 3.3 packages, it advanced to 4 packages in 1936. "Rinso" again led the field, with 46.4 per cent, but its margin over "Oxydol," with 40.2 per cent, has been cut substantially from 1935 figures. The complete list of figures for products of this type follows:

Granulated Soap and Soap Beads

Brand	1936 %	1935 %
Rinso	46.4	50.8
Oxydol	40.2	37.3
Super Suds	23.3	19.3
Silver Dust	15.7	...
Palmolive Beads	8.5	15.3
Ivory Snow	3.0	4.1
Chipso Granules	1.7	2.2
Miscellaneous	1.5	1.6

In the soap crystal and water softener group the number of users dropped from 37.6 per cent in 1935 to 32.2 per cent for 1936. Average monthly consumption per family remains unchanged at 1.8 packages. "Climalene" continues to be the leading seller, with a percentage of 55.4. Other brands are reported in use as follows:

Soap Crystals and Water Softeners

Brand	1936 %	1935 %
Climalene	55.4	56.2
No Name	10.0	8.5
Magnetic	6.9	6.9
4-M	6.1	6.4
Lite	3.8	5.1
Rex	3.1	3.7
Melo	2.8	2.0
Lazy Man's Cleaner	2.5	2.7
Olo	1.9	1.9
Steinmeyer's	1.1	1.6
Miscellaneous	9.4	8.4

The downward swing in the use of washing powders continued in 1936. The 1935 report showed that 9.6 per cent of Milwaukee families were using products in this class, and 1936 figures indicate a decline to 7.7 per cent. Average monthly consumption per family is also lower—being 1.9 packages as against 2 a year previous. "Gold Dust" holds its place as the leading seller with a mark of 70.9 per cent and the other brands rank as follows:

Washing Powders

Brand	1936 %	1935 %	1929 %
Gold Dust	70.9	69.2	55.5

Johnson's	4.6	5.6	9.3
Kao	4.0	1.7	...
O. K.	3.7	...	...
Star	2.3	3.6	11.6
Watkins	1.7	2.0	...
Lighthouse	1.3	1.0	...
Superior	1.1	5.6	...
Miscellaneous	11.2	12.9	25.8

Little change from 1935 figures is shown in the data on scouring cleansers. The percentage of Milwaukee families using scouring cleanser is reported as 90.8 per cent for 1936 as compared with 90.1 per cent in 1935. Average monthly consumption per family remains at 2.8 cans which has been a fairly constant figure over a long period. "Kitchen Klenzer" is still the leading brand with a mark of 39.5 per cent, although it has lost considerable ground since 1935 when it was in use in 44.9 per cent of all families using this type product.

Scouring Cleansers

Brand	1936 %	1935 %	1934 %
Kitchen Klenzer	39.5	44.9	51.2
Old Dutch	23.0	21.8	19.8
Sunbrite	11.6	12.9	9.5
Gold Dust	8.3	8.5	8.1
Brite-Ize	6.6	1.2	...
Bab-O	4.8	3.8	3.7
Bon Ami	4.1	5.0	4.2
Lighthouse	3.6	3.8	4.0
Miscellaneous	2.1	1.8	2.2



Water Hardness Statistics

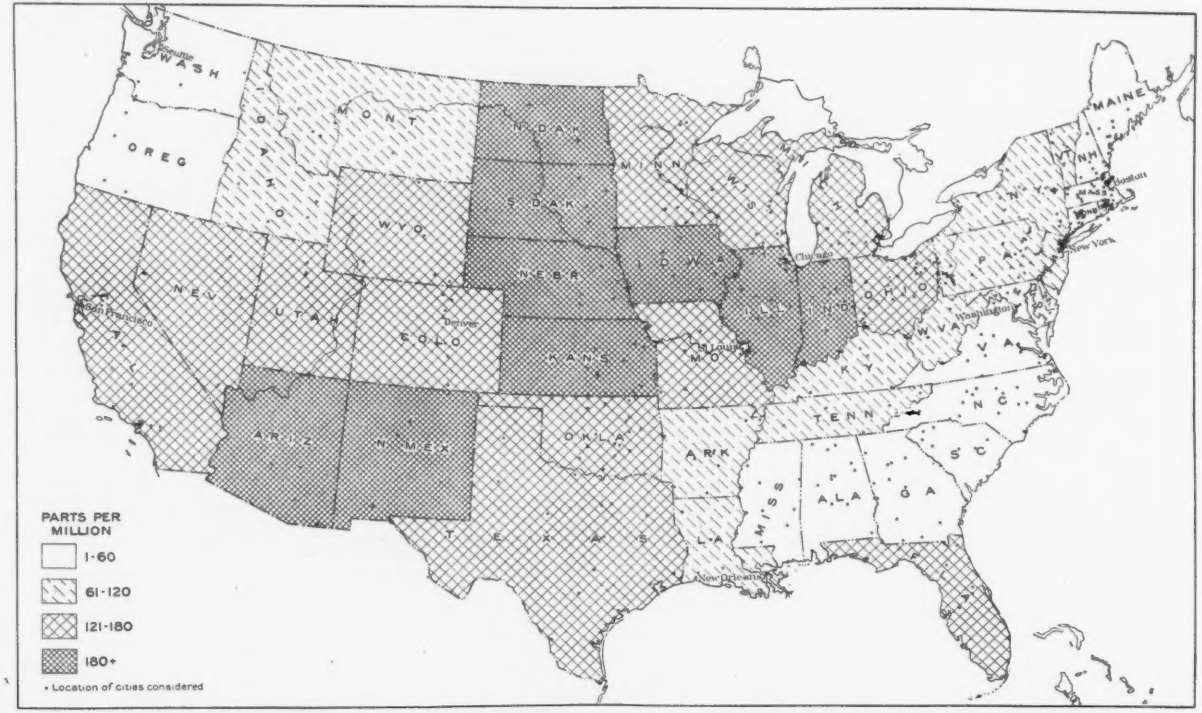
Approximate Average hardness (as CaCO'3) of larger public water supplies in the United States, 1932

Place	*Population supplied (thousands)*	*Hardness (parts per million)*
Akron, Ohio	225	*100
Atlanta, Ga.	270	14
Baltimore, Md.	805	54
Birmingham, Ala.	305	*67
Boston, Mass. (Met. Dist.)	1,385	15
Bridgeport, Conn.	185	15
Buffalo, N. Y.	573	118
Chicago, Ill.	3,679	125
Cincinnati, Ohio	451	*110
Cleveland, Ohio	1,200	120
Columbus, Ohio	291	*84
Dallas, Tex.	260	*69
Dayton, Ohio	201	368
Denver, Colo.	.288	*121
Detroit, Mich.	1,798	97
Flint, Mich.	156	*298
Fort Worth, Tex.	163	*164
Grand Rapids, Mich.	169	*123
Hartford, Conn.	208	17
Houston, Tex.	292	**85
Indianapolis, Ind.	364	
White River		*280
Wells		316
Jersey City, N. J.	404	55
Kansas City, Mo.	419	*221
Los Angeles, Calif.	1,238	
Owens River		*140
Los Angeles River		*205
Louisville, Ky.	308	*110
Memphis, Tenn.	253	39
Milwaukee, Wis.	652	126
Minneapolis, Minn	464	*172
Nashville, Tenn.	154	*80
Newark, N. J.	1,045	29
Pequannock Supply		
Wanaque Res. (North Jersey Dist.)		50
New Haven, Conn.	242	
Lake Whitney		69
Lake Dawson		22
Lake Gaillard		48
New Orleans, La.	459	*72
New York, N. Y.	6,930	
Catskill supply		20
Croton supply		51
Ridgewood supply		*70
Oakland, Calif.	457	**70
Okla. City, Okla.	185	*121
Omaha, Nebr.	214	*251
Philadelphia, Pa.	1,951	
Delaware River		*69
Schuylkill River		*120
Phila. Suburban District, Pa.	315	62
Pittsburgh, Pa.	985	*90
Portland, Ore.	302	8
Providence, R. I.	314	32
Richmond, Va.	183	*56
Rochester, N. Y.	382	
Hemlock Lake		75
Lake Ontario		105
St. Louis, Mo.	822	*83
St. Paul, Minn.	272	160
San Antonio, Tex.	232	221
San Francisco, Calif.	634	**150
Scranton, Pa.	214	**30
Seattle, Wash.	366	21
Syracuse, N. Y.	209	113
Toledo, Ohio	291	*253
Washington, D. C.	503	*93
Worcester, Mass.	195	11
Youngstown, Ohio	186	81
Total	35,048	

* *Varies over a wide range.*

** *Estimated.*

U.S. GEOLOGICAL SURVEY WATER-SUPPLY PAPER 680 PLATE 1



WEIGHTED AVERAGE HARDNESS, BY STATES, OF WATER FURNISHED IN 1932 BY PUBLIC SUPPLY SYSTEMS IN OVER 600 CITIES IN THE UNITED STATES.

Fly Spray Labels

AN official statement regarding the labelling of pyrethrum fly sprays has been issued by Dr. C. C. McDonnell, Chief, Insecticide Division, U. S. Food & Drug Administration. This notice to manufacturers of fly sprays outlines the facts which should be carried on labels, and indicates the attitude of the U. S. Government toward various label claims. It states:

"Household fly sprays are subject to the provisions of the Federal Insecticide Act if shipped in interstate commerce, imported into or exported from the United States, or marketed in the District of Columbia or the Territories. This Act requires that the labeling of any article within its purview shall not be false or misleading in any particular.

Composition of the Sprays. The mineral oil-pyrethum fly sprays are extracts of pyrethrum in a carrier of mineral oil similar to kerosene and usually contain some perfume. They may be made either by direct extraction of the pyrethrum with the mineral oil or by mixing a concentrated commercial pyrethrum extract with the mineral oil. As a general rule the active ingredients from one pound of a pyrethrum (containing 0.9 per cent or more of pyrethrins) in one gallon of a suitable oil will be sufficient for an effective spray. The mineral oil used should not be too light (low boiling) since preparations made with such an oil have been found to be less effective.

Insecticidal Uses. While these products are commonly referred to as 'fly sprays' they are often recommended for use against a number of other household insects, as for example, mosquitoes, roaches (water bugs), bed bugs, ants and clothes moths. They are contact sprays, that is, in order to be effective they must be applied in such a manner as to hit the insects to be killed. Since the habits and life cycles of different insects vary, the directions must in each case be adapted to the particular varieties of insects to be controlled, as for example:

For Flies and Mosquitoes. The directions should provide for closing all doors and windows and thoroughly spraying the material in all parts of the room, particularly toward the ceiling, filling the room with a fine mist. The room should be left closed for 10 to 15 minutes, and the fallen insects then swept up and destroyed. This latter precaution is necessary because some of them will be only paralyzed and will later recover. Preparations of this type applied to the face and hands have some effect for a short period in repelling mosquitoes.

For Ants, Roaches and Bed Bugs. The product should be sprayed thoroughly with force into all parts of the room, paying special attention to cracks and crevices and hitting as many of the insects as possible. For the control of bed bugs the bed, all tufts and seams in the mattress and all places in the room where the bugs may hide should be thoroughly sprayed. Directions should be given for repeating the treatment as often as may be necessary.

For Clothes Moths. The directions should provide for first cleaning all articles to be protected followed by a thorough spraying, paying particular attention to the seams and folds. The interior of all containers should also be thoroughly sprayed. Unless the articles are to be stored immediately after treatment in moth-tight containers, directions should be given for repeating the sprayings at least once a month. Preparations of this type should not be recommended for use on upholstered furniture except where explicit directions are given for opening up the upholstery and heavily spraying or saturating the interior fabric, as well as the outside surfaces, and repeating the treatment when necessary.

Unwarranted Claims. These preparations cannot be relied upon to repel mosquitoes when used in the open such as on the porch or about camps. They are not effective against *all* household insects and claims of 'extermination,' the abbreviation 'etc.' and statements such as 'all other insects,' 'all crawling insects' and 'all flying insects' are unwarranted and should not be made. These sprays cannot be relied upon to control any insect that cannot be reached by the spray. This applies also to the eggs, which are often placed where they are inaccessible.

Products of this type are injurious under certain conditions to both man and animals. Therefore their labels must not bear such unqualified claims as 'non-poisonous,' 'non-injurious,' or 'harmles to man and animals.'

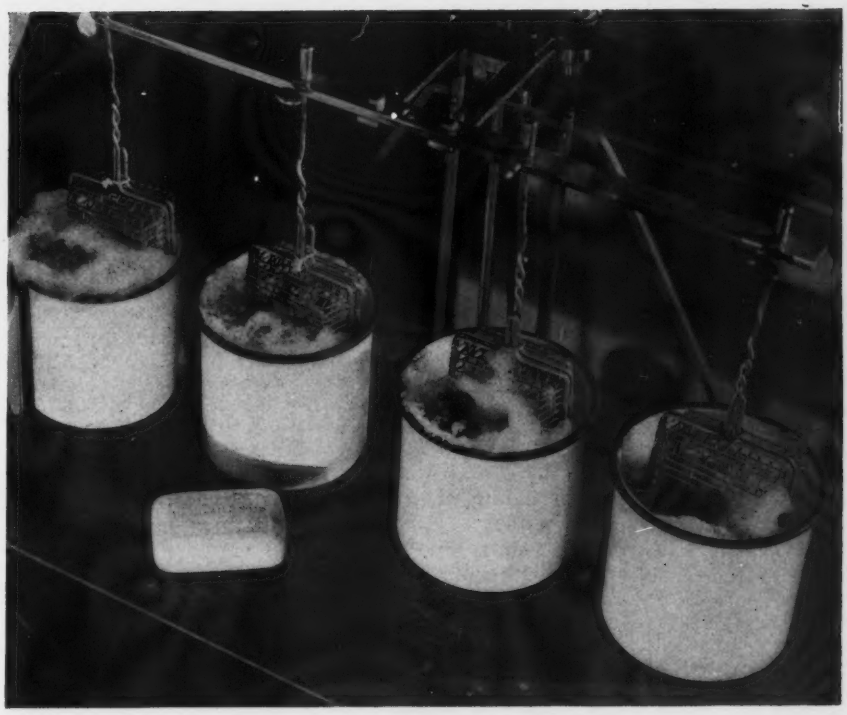
They are of no value in disinfecting and will not prevent diseases.

Inflammability. Kerosene is, of course, inflammable and fly sprays containing it should not be sprayed in the presence of open flames. A warning statement on the label is desirable.

Ingredient Statement. The Insecticide Act requires that any preparation containing an inert ingredient must bear on its label a statement of the name and percentage amount of each and every such inert ingredient and the fact that they are inert, or, in lieu of this, a statement of the name and percentage amount of each and every active ingredient and the total percentage of the inert ingredients. Preparations of the type described above ordinarily consist entirely of active ingredients and no statement regarding the ingredients is required to appear on the label. However, such claims as 'Active Ingredients 100 per cent' and 'Contains no inert ingredients,' are unobjectionable provided, of course, they are true. The statement '100 per cent active' is objectionable as it may be taken to imply that the product is 100 per cent effective."

Deterioration. Mineral oil-pyrethrum sprays if exposed too long to the light of the sun in ordinary glass bottles, may lose much of their efficiency due to the decomposition of the active ingredients. It has also been reported that deterioration may occur due to decomposition of the pyrethrins through contact with the solder or lining of the can when packed or stored for considerable periods of time in metal cans.

Testing of Toilet Soaps



A SERIES of special tests for toilet soaps have been worked out by a well-known Philadelphia laboratory and are used by them in testing soaps which are sold by a prominent department store. In all essential respects, their methods follow standard technique such as will be found in representative texts or as outlined in the U. S. Government Specifications for milled toilet soaps. Their laboratory has made several variations and refinements in testing technique, however, which were outlined for SOAP BLUE BOOK as follows:

The following procedure is used in a complete analysis:

1—Volatile matter—standard method; sample dried at 105° C. to constant weight.

2—Moisture—A modified Barrett method such as is specified for the determination of moisture in petroleum or bituminous products. A sample of the soap is distilled in xylene, and the water read directly in the special distilling tube receiver.

3—Matter insoluble in alcohol—standard procedure except that a centrifuge is used for separation rather than the filter or Gooch crucible.

4—Free acidity or alkalinity — standard method. The barium chloride method is also used for determination of free alkali in which we precipitate the barium salts of alkalies other than hydroxides, and titrate the free alkalinity directly with phenolphthalein as an indicator.

5—Matter insoluble in water — standard method, but here again centrifugal separation is preferred.

6—Combined alkali—standard method is used.

7—Unsaponified and unsaponifiable matter—a modified Soxhlet Extraction Apparatus gives very good results in this test, requiring a minimum amount of effort and manipulation. The soap is cut into small shavings, allowed to dry in warm air (50-60° C.) and then placed in the syphon extraction tube of the Soxhlet apparatus, the bottom of which is lightly plugged with absorbent cotton. The sample is extracted with petroleum ether for about 5 to 6 hours, the extract collected in a weighed flask, and the solvent evaporated. The residue after evaporation represents the unsaponified and unsaponifiable portions of the fatty matter of the soap, and by saponification the proportions of each may be calculated.

8—Lather (Sudsing) test—an adaptation of the "drop" test, used to determine the "hardness" of water. A standard soap solution is added drop by drop to a definite quantity of water. The number of drops of this standard soap solution required to produce a permanent suds gives an indication of the degree of hardness. We have adapted this test to measure the *relative* "sudsing" qualities of soap samples. The results are not interpreted on an absolute basis, but used as a means of comparison. In making this test, we prepare weak solutions of the soaps to be tested (½ per cent in distilled water), and then add these solutions, drop by drop to a definite quantity of hard water. A comparison of the quantity of soap solution required to produce a lasting suds, for each of the soaps being tested, gives an indication of the sudsing quality. (The weight of soap is calculated on a bone-dry basis.)

9—Lasting quality of perfume—this is likewise a comparative test, and is made by placing samples of the various soaps (cut to a definite size and shape) in an oven at a temperature of about 50° C. in moving air, and then comparing the odor after a period of this exposure, to that of a sample of the soap that has not been exposed. Comparisons are also made with other exposed samples of different soaps. The results obtained in a test of this nature are of course, only a rough estimation, and no attempt is made at a quantitative interpretation.

10—Lasting quality of the soap—this test was devised in order to show the *relative resistance* of various cakes of soap to rubbing or washing away in actual use. In making this test, samples of the soap are cut into blocks of the same shape and surface area, and suspended in wire cages. These cages are attached to a device which alternately dips them into and removes them from containers of water. Distilled water is used, and the temperature maintained at desired levels. At various intervals of time the water is changed, and fresh distilled water added. The soap is removed from the cages at intervals, the excess moisture removed by means of filter or blotting paper, and the cakes weighed. The loss in weight gives an indication of "lasting" quality.

Furniture Polishes

By Ralph H. Auch
Chief Chemist, American Products Co.

IT is difficult to classify polishes definitely, but for convenience six such divisions are made. If there is any logical order in their treatment it is perhaps in decreasing speed of application and increasing endurance and quality of the polish.

1. Straight oils and oil mixtures. This type has been popular but interest in it is waning except for use as a dusting liquid. The base is usually a light paraffin oil. A low cost oil with the following specifications is quite satisfactory in the ordinary formula.

Oil Specifications

Specific Gravity ..	.878 to .898
Viscosity at 100..	75 to 85
Cold	15
Pour	20
Flash	325
Fire	375
Color	6 M.P.A. maximum

To increase the cleaning action, a little kerosene, benzol, V.M.P. naphtha, chloroform, ether and other solvents are sometimes incorporated. To leave a more lustrous finish about 2 per cent of carnauba or other hard waxes have been put into the formula with the aid of heat. Linseed or other drying oil, from 5 per cent up to 10 per cent, in a like quantity of turpentine is sometimes blended in. Then, of course, a bit of odor and a trace of color are often added. The tint usually offered is red, which coloring is a dye that obviously must be oil soluble.

A typical basic formula of this type is the following, which can be modified to meet any requirements. For example, by adding about ½ per cent of triethanolamine, the cleansing action is materially increased.

Raw Linseed Oil.....	5 to 10
Turpentine	5 to 15
Benzine	5 to 15
Paraffin Oil	85 to 60
Color and Odor (if desired)	q.s.
	100

2. Oil and Acid Mixture. This type is the two layer, relatively unsightly, but still quite popular one. So that on shaking, the emulsion will stand up long enough for use, some gum is often incorporated. It is usually gum tragacanth or arabic.

The old "butter of antimony" polish is of this type and acid is used to hold the emulsion for a time on shaking. Formerly vinegar and even hydrochloric acid were the acids used but now diluted acetic acid is ordinarily employed.

No better basic formula can be offered perhaps than that published in the pharmaceutical recipe book of the American Pharmaceutical Association.

Linseed Oil	400 cc.
Alcohol	100 cc.
Oil of Turpentine.....	100 cc.
Solution of Antimony Chloride	25 cc.
Diluted Acetic Acid.....	100 cc.
To make	725 cc.

Other organic solvents are sometimes included in the formula to build up the cleaning properties. Since water is cheaper than oil, the water content is often run up and the oil content run down, in which case the emulsion is made a bit more stable and the water disguised somewhat by the addition of either of the gums mentioned above.

3. Oil and Water Emulsions. This classification, if it may be thought of as such, involves the use of polish bases or the so-called "soluble oils" that are available on the market. Various ones are offered and are the easy way out for some small manufacturers.

In the case of polish bases being used the manufacture of the polish involves simply adding four or five gallons of light oil of about the specifications set forth above to one gallon of the base, warming the mixture then running in four to ten gallons of water in a small stream with violent agitation. With reasonable care in mixing, a stable inviting looking emulsion can be prepared. It may be scented and tinted if desired. Typical of the emulsion oil formulae, when an emulsion oil instead of a soluble oil is employed, is the following as a starting point:

Emulsion Oil	10
Water	59
10% Caustic Soda	1
Light Hydrocarbon Oil	30
To make	100

By way of variation, the sodium hydroxide may be replaced by an equivalent quantity of aqueous ammonia or triethanolamine although there is a greater tendency to darken with age. The light hydrocarbon oil may be replaced in part with turpentine, kerosene, naphtha (coal tar) or V.P.M. naphtha (petroleum), pine oil, toluol or cedarwood oil.

An interesting variation is a 50-50 mixture of oil and water emulsified with 3 to 5 per cent of sulfonated naphthenic acid. Any formula built along this line brightens the surface and polishes well and with ease but is rather deficient as a cleanser.

4. Oil and Soap Emulsion. This type of furniture polish continues to enjoy popularity in spite of the inroads of types 5 and 6 below. It is a two cloth polishing proposition but does not involve the vigorous rubbing to bring up a polish that the next two classes do. It is usually 40 to 60 per cent water, the emulsifier being soap. It is cheaply prepared and the oil used need not be water white nor wholly bloomless so the polish can be produced in bulk at a very reasonable cost.

The oil may be straight paraffin oil or various other solvents such as mentioned above may be added to obtain any desired effect. The soap may be any low titre soap dissolved in the water in concentration of from 3½ to 7½ per cent. Soap can be made right in the mixture by adding stearic or oleic acid, abietic (rosin) acid, "Indusoil" (pine fatty acid) or linseed fatty acid to the oil portion and running in the equivalent quantity of soda or potash lye, ammonia or triethanolamine dissolved in warm water. A soap solution can also be made, first, by boiling any desired oil, or mixture of oils, with an equivalent quantity of soda lye or potash lye and analyzing to insure neutrality before adding the oil and odor.

The advantage of oil over fat and of potash lye over soda is that there is less likelihood of jelling in the containers. Before bottling it is well to stabilize the emulsion by passing the whole through a colloid mill or at least a steam emulsifier.

Typical of this kind of polish is the following in which the making of the soap is done in the simplest possible manner, namely, right in the batch:

Paraffin Oil	25
Naphtha	12
Pine Oil	1.5
Stearic Acid (double pressed)	4
Completely Denatured Alcohol	2
Triethanolamine	2
Water	53.5
To make	100

The first four ingredients are mixed together and warmed (to about 60 degrees C.) until the stearic acid is completely melted. In a second container warm the last three ingredients to the same temperature. Then add the latter to the former in a thin stream while agitating. The agitation should be continued until cool. By replacing part of the paraffin oil with odorless kerosene or V.M.P. naphtha, the cleansing action can be materially increased and the tendency toward showing finger marks reduced.

5. Oil in Water Emulsion, Containing Wax. It is with this class of polishes that real work begins when it comes to using them. That this type is superior to the four types already discussed there can be little question, but that it requires more work in application than many users are willing to give is equally true. Several of the new polishes coming to market with good sponsorship are of this type nevertheless. In physical appearance they are stable emulsions, somewhat viscous and quite creamy in consistency.

In composition they vary from the type discussed above with the paraffin oil further reduced and a few per cent of one or another of the hard waxes added, to an entirely dissimilar formulation containing no oil whatever but a mixture of two, three or even four waxes and an organic solvent or two. Triethanolamine soaps are the usual emulsifiers although olive oil soap is generally equally satisfactory. And at this moment, Japan wax soap suggests itself as worthy of some experimentation.

The commonplace waxes, such as carnauba (of good quality No. 1 or No. 2, and not the chalky), bleached montan, bleached beeswax and ceresin are usually used. Several of the synthetic waxes have characteristics that make them desirable additions to such a formulation.

Typical Formulae Are the Following

Paraffin Oil	10
Turpentine	10
Montan Wax	2
I. G. Wax (O. P. grade)	1
Potassium Hydroxide	1
Stearic Acid	5
Water	71
Odor	q.s.
To make	100

Run the melted waxes and stearic acid into the heated water containing the alkali and continue the agitation until cool. This emulsion is not quite stable but on shaking it reforms readily.

Bleached Beeswax	2
Carnauba Wax	6
Halowax No. 1013	4
Turpentine	20
Stearic or Oleic Acid	3.5
Triethanolamine	1.5
Water	63
Odor	q.s.
To make	100

Melt the three waxes and add the turpentine with agitation. Prepare the soap solution by heating the triethanolamine dissolved in the water almost to the boil and adding the molten stearic acid or liquid oleic. The soap may also be prepared by heating the triethanolamine and water with stearic acid in powdered form. Run the former solution into the latter with agitation. Continue to agitate until cool. If properly made the emulsion is stable.

Carnauba Wax	3.25
Bleached Beeswax	1.25
Ceresin Wax	1.25
Naphtha	25.0
Stearic Acid	2.5
Triethanolamine	1.5
Water	65.25
Odor	q.s.
To make	100

Melt the stearic acid and waxes completely without overheating. Add the triethanolamine then run in the naphtha. Run in the water at the boil in a thin stream while agitating and continue agitation until cool. Use a naphtha of high flash point to minimize fire hazard and of high initial boiling point to keep down volatilization.

6 Wax in Organic Solvents. This type generally is the more expensive to manufacture due to the fact that no water enters into the formula. The wax produces a relatively permanent finish and high luster, but, like the type next above, requires vigorous rubbing with a dry cloth subsequent to application. The cleaning action is provided by the solvent. It differs not materially from liquid floor waxes of the rubbing variety. A simple old formula of this type is the following which makes a solid wax.

Ceresin Wax	24
Carnauba Wax	4
Turpentine	72
Color and Odor	q.s.
To make	100

There is no end of various waxes that may be dissolved in almost no end of various solvents. By lowering the solid wax content and raising the solvent portion, any desired consistency down through a mush to a free flowing liquid may be prepared. Since this type is a solution or suspension and not an emulsion, no difficulty is experienced with separation into two layers. There is however, a tendency for wax to separate out, particularly when the polish becomes chilled.

No discussion would be complete without some reference to polishing cloths. They still enjoy some sale although it is confined largely to house to house canvassers. Canton flannel is the usual fabric employed and it is cut about 18x24 or 18x36 inches in size. The cloth may be bound or left unbound. The fabric is immersed in the polish solution and the excess squeezed out by passing through an ordinary clothes wringer with the rolls set quite tight. An alternative method is to suspend fabric in a spray booth and spray with a spray gun containing the polish.

The polishing liquid may be straight oleic acid suitably scented. Sometimes petrolatum or stearic acid, or both, are dissolved in it to the extent of 5 to 10 per cent to render it less oily. The oleic acid may be replaced in whole or in part with paraffin oil. To facilitate absorption and reduce the final oil content it may be thinned with a volatile solvent allowing the cloth to dry before packaging.

1937
OFFICIAL CONTROL INSECTICIDE

THE 1937 Official Control Insecticide, authorized to be made up and packaged for distribution by the National Assn. of Insecticide & Disinfectant Manufacturers is available for distribution to the industry.

The control insecticide is available to all firms or laboratories whether members of the Association or not.

All commercial household insecticide sprays must be tested against this control insecticide in order to comply with the official test procedure of this Association. A supply of the control insecticide should be in every laboratory using the Peet-Grady Method and the official procedure.

Packed in single 6 oz. bottles, or cases of 12 bottles.

Full directions for use with each bottle.

Send orders, or inquiries for further information to

National Association of

INSECTICIDE & DISINFECTANT MANUFACTURERS

John H. Wright, Secretary

122 East 42nd Street **New York**

Testing and Grading Insecticides

The Official Method of the
*Natl. Assn. of Insecticide & Disinfectant Manufacturers**

(Liquid Spray Type, Oil Base)

THE official specification for household liquid insecticide (fly-spray oil base type) of the National Association of Insecticide & Disinfectant Manufacturers is given below under the heading "Specification." Following it are the methods for testing and grading an insecticide by comparison with tests secured on an Official Control Insecticide† at the same time. Also is given the full and official text of the Peet-Grady Method for testing liquid insecticides physiologically against house flies. The Peet-Grady Method is specified as official in all tests and is to be used with the unknown insecticide and the Official Control Insecticide at the same time.

All results from insecticide tests are to be reported as plus or minus in comparison with the results secured with the Official Control Insecticide. Blank tests made with the Official Control Insecticide must show a kill of between 30 per cent and 70 per cent, and if the average kill of the blank tests falls outside of this range, the tests shall not be considered valid.

In reference work, not more than two unknown insecticides may be tested against one test with the Official Control Insecticide. Hereafter, no Peet-Grady results are to be reported as 50, 60, 70 per cent kill, but are to be reported *plus or minus* as explained below in comparison with Peet-Grady results obtained with the Official Test Insecticide at the same time.

*Adopted Dec. 8, 1936, 23rd annual meeting, Philadelphia.

†Official Control Insecticide, with instructions for use, is obtainable in 6 ozs. bottles, singly or in cases of one dozen, for a nominal price from the Natl. Assn. of Insecticide & Disinfectant Mfrs., 122 East 42d St., New York.

Specification

1. A household spray oil type insecticide shall be harmless to man and warm-blooded animals when used as directed.

2. When sprayed as directed, it shall not stain fabrics, wallpaper, or general household furnishings.

3. When used in the customary manner it shall not penetrate closed packages of food materials commonly found in homes.

4. It shall have no objectionable odor, and no particular odor shall be specified.

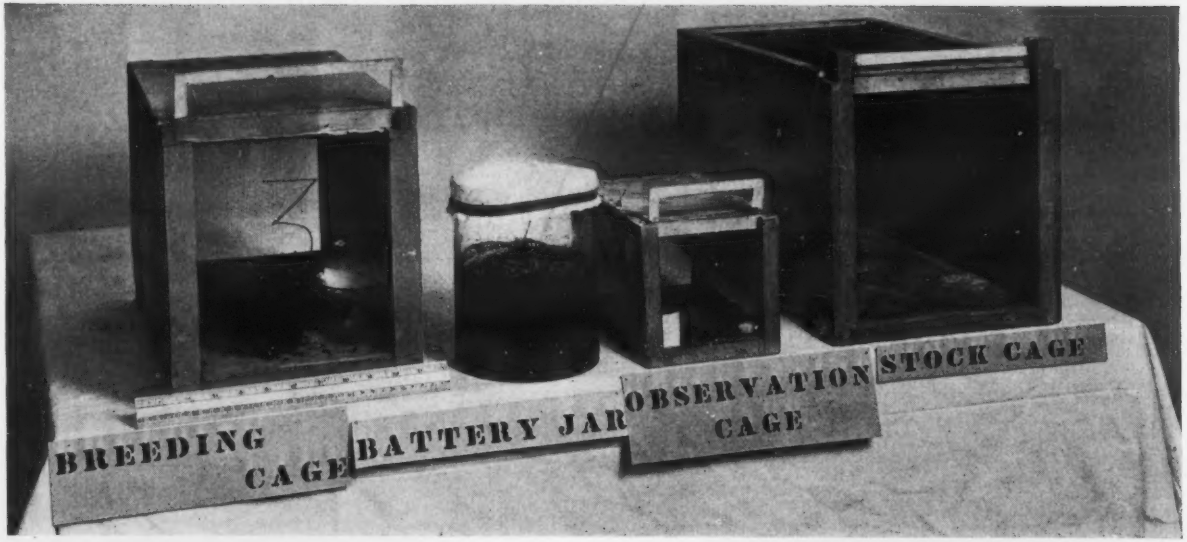
5. It shall have a flashpoint not less than 125° F. when in the Tagliabue closed cup.

6. It is recommended that it be purchased on a direct comparative basis with the official control insecticide of the National Association of Insecticide and Disinfectant Manufacturers, by using the method of test specified on the bottle of the official control insecticide.

The association has adopted the following grades (the plus or minus figures designate the points over or under the official control insecticide when the "unknown" and the "control" are stated at the same time and in the same manner):—

AA	+21	Excellent
A	+20 to +11	Good
B	+10 to —10	Equal to official control insecticide
C	+11 to —20	Poor
D	—21	Little value

The Required Fly-Breeding Equipment for the Peet-Grady Method.





Left—Maggots of the House Fly in Larval Stage.

Right—Eggs of House Fly Magnified many times.





THE PEET-GRADY METHOD

A Biological Method for the Determination of the Effectiveness of Household Insecticides

This paper is a revision of the original papers from the Research Laboratories of the Röhm and Haas Co., Inc. by C. H. Peet and A. G. Grady, ("Journal of Economic Entomology," *vol.* 21, *pgs.* 598-625, *August,* 1928) *prepared under the supervision of the Insecticide Standardization Committee as a part of the standardization program of the National Association of Insecticide & Disinfectant Manufacturers.*

THIS paper details a successful method evolved whereby large numbers of house flies can be reared through the whole year. The technic employed is simple, inexpensive and dependable. Full credit for the continuous breeding of this insect should be given to Glaser[1] who conceived the idea of supplementing the larval medium with yeast cells suspended in water during the winter months.

The literature on the biology of *Musca domestica* has assumed extensive proportions and it is not the intention of the writers to deal with it except to note some observations on the activity and longevity of the imagines during the winter months.

The larvae were reared throughout the winter on a medium consisting of fresh horse manure which was kept in a moist condition with water and yeast cells suspended in water, according to Glaser's method. Excellent results were obtained. Attempts were made during the latter half of January and during the month of February to rear flies on horse manure alone. In every case, except two, the insects died either in the larval or pupal stages. In the two successful attempts the horse manure was taken from the stables during a warm spell. Whether this had anything to do with carrying the larvae through to the adult stage was not determined.

From these experiences and the experiences of other investigators it was concluded that unless the horse manure was supplemented during the winter months larval life could not be supported and a continuous supply of insects could not be maintained.

The adult insects thrived exceedingly well on a diet consisting of milk, lump sugar, sweetened bread and yeast suspended in water. About 10 cc. of milk was dropped into the cages every day and about the same amount of yeast suspension was fed every second day. Fresh sweetened bread was placed in the cages about once a week. The bread was kept in an assimilable condition by wetting it with water. Other foods were added to this diet at different times such as beef extract, casein and fish-scrap. However, the adults developed sufficiently well on milk, bread, sugar and yeast so that the strictly protein foods were not used as regular parts of the diet.

The apparatus and equipment used to rear the house flies throughout the winter months were as follows: A constant temperature insectary where the breeding cages, rearing jars and stock cages were kept; breeding cages in which the insects were bred and oviposition took place; rearing jars in which the insect was reared from the egg to the adult stage; and finally, stock cages where the flies to be used for insecticidal tests were kept.

[1] Note on the continuous Breeding of Musca domestica Journ. Econ. Ent., 1927, XX, 432-433.

Insectary

A ROOM 12 feet long, 11 feet wide and 9 feet high was thoroughly insulated with "balsam wool." One end and one side wall contained double windows which were lightly sprayed with whitewash. The entrance door was in one corner. Shelves lined three of the walls and a rack of shelves was built in the center of the room. The heating element consisted of four 1 inch steam pipes totaling 72 feet in length running along the inside of the two outside walls of the chamber. A Sarco heat regulator was used to control the temperature of the heating unit.

Electricity may be substituted for steam in heating the room if it is considered more desirable. Excellent temperature control can be obtained by using a unit similar to that manufactured by the General Electric Co., Catalogue No. 2829653 G-3, CR 7002, 110 volt.

A cooling unit consisting of an Aerofin radiator containing 300 feet of ¾ inch, finned radiation was suspended in the center of the room from the ceiling and connected to a cold water supply (this water was about 50 to 55° F. summer and winter). A Sylphon thermostatic valve controlled the flow of water through the cooling unit and a drip pan suspended beneath the cooling unit caught the condensate which collected on the cooling coils and delivered it by a drain to a sewer line. The temperature regulators were set at 85° F. and a Brown Recording Thermometer showed that the system thus installed was capable of holding the temperature of the insectary to 85° F. ±1°.

The humidifier described in the original paper was later eliminated since it was found that the moisture of the culture medium in the rearing jars kept the humidity of the chamber at about 70%. Strict control could not be obtained without recourse to very elaborate equipment.

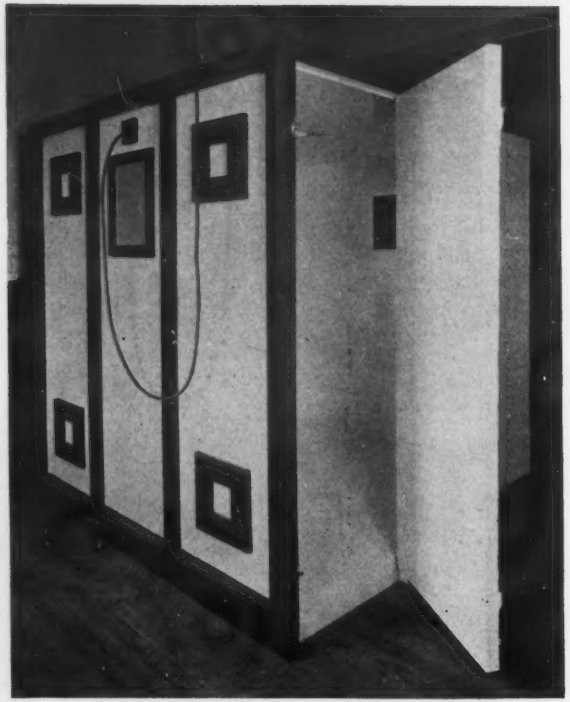
Breeding Cages

BECAUSE flies are susceptible to nutritional deficiency diseases and to attacks of parasites and parasitic fungi it was found best to keep the insects used for breeding purposes in relatively small separate cages so that if one colony of breeders became infected the disease could be checked before it spread to the other cages. As a result of this precaution, no high mortality occurred among the flies in the breeding cages that could be laid to a diseased condition.

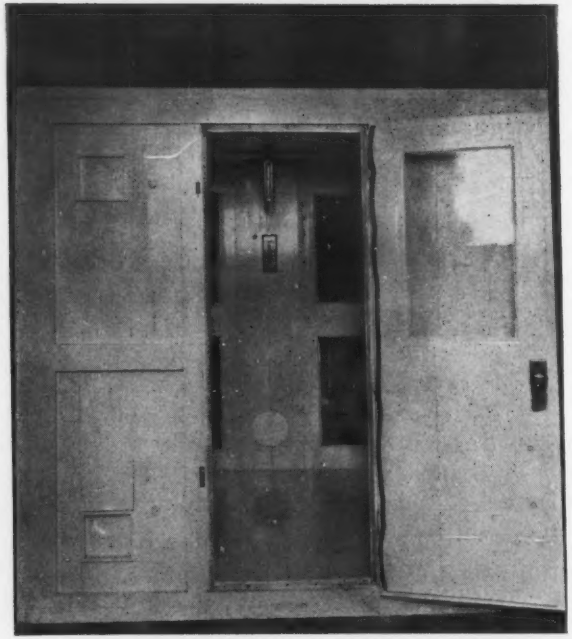
As it was desired to have on hand hundreds of flies of known ages at all times, six breeding cages were used. Their dimensions were: length, 18 inches; breadth, 9 inches; height, 10 inches. The floor was made of a board ½ inch thick to which the frame was attached. The frame was constructed of ½ inch strips. The upright strips were nailed to the floor of the cage and connected by ½ inch crosspieces. The sides, top and back were made of wire fly screening, (1/16 inch mesh) tacked to the frame. The front was a piece of glass set in grooves which served as a door. These cages are easy to clean, provide plenty of room for the insects to move about and access to the inside is gained easily by pushing up the glass door to introduce food and insects.

Rearing Jars

ORDINARY battery jars 6 inches in diameter by eight inches high were used for rearing the larvae. These jars were closed by pieces of cheesecloth about 9 inches in diameter which were held in place by ¾



Exterior View of the standard Peet-Grady Test Chamber, which is a six foot cube.



View of the interior of the Peet-Grady Chamber, showing temperature and humidity control, and large pipe at top for rapid exhausting of the air following each test.

inch elastic "garters." This type of top is inexpensive, easily made, gives entirely adequate ventilation, and will serve for a number of generation of flies.

Stock Cages

VARIOUS efforts were made to develop cages which would allow automatic or semi-automatic transfer of flies from the rearing jars but none proved very successful and ultimately the same type of cage was adopted as were used for breeding cages. These cages were numbered in order that the age of the flies contained therein might be recorded.

Since flies were not used for insecticide tests after they were 5 days old, only five cages were necessary for a series but when large numbers of flies are being bred, it becomes necessary to have duplicate series of cages in order that overcrowding of the cages may be avoided.

Transfer of the flies from rearing jars to stock cages is accomplished by lifting the glass slide of the cage, inserting the covered end of the rearing jar, slipping off the cheesecloth cover, tapping the jar, withdrawing the jar, closing the glass slide and replacing the cheesecloth cover.

Procedure

IN each of the breeding cages about two hundred adult flies, about equally divided as to sex, were kept. When the insects died or became unduly soiled or injured they were replaced by others. Two 200 cc. beakers filled with wet horse manure were placed in each cage for the flies to oviposit on. In the course of two days hundreds of eggs were deposited on the medium. Every day the beakers containing eggs and larvae were removed. Other beakers filled with fresh horse manure, to which about 15 cc. of water had been added, were then placed in the breeding cages. In this way fresh medium was kept in the breeding cages continually for the flies to oviposit on. It appears that this part of the technic stimulated the responses of the females in regard to oviposition and aided somewhat in keeping the flies from laying eggs on the adult food, i.e., the sweetened bread.

To insure a large supply of adults, several cultures were started each day. About five or six hundred eggs and larvae, obtained as above, were transferred to each of the rearing jars. Each jar was filled to about the three-fourths mark with fresh, loosely packed horse manure. It was found that if about 200 cc. of water was added to the manure when the culture was started it was sufficient to keep the medium in a moist condition until the adults emerged. The losses resulting from larvae drowning were insignificant. To this 75 cc. of the supplementary food, yeast cells suspended in water, was added and about 10 cc. more was dropped in the jars every other day until the larvae were about ready to pupate. The amount of yeast to be fed varies, of course, with the number of larvae to be reared. It was found that in this case if the amount of yeast suspension was cut down the adults, if they emerged, were apt to be stunted and possess little vitality.

In making up the yeast suspension Glaser advises, "In practice we dissolve a one pound bakery cake of commercial yeast in two liters of water. The suspension of yeast cells is then distributed in pint bottles and autoclaved, to kill fungi which often cause trouble, and stored on ice." We have found that if one pound of yeast is dissolved in two and one half or three liters of water, very good results can be obtained. At first the yeast suspension was autoclaved using pint milk bottles as receptacles. A pyrex flask was later substituted for the milk bottles as these are apt to crack when subjected to high temperatures a few times. A number of cultures were reared using yeast suspension which was not autoclaved. While this part of the technic may be left out, with little or no difference in the results, it is advisable to sterilize the yeast suspension if an autoclave is available.

The horse manure containing eggs and larvae was then emptied onto the fresh medium, the covers fitted on the jars and the culture was incubated at 85° F. The larval medium settled in a few days to about the middle of the jar which gave the adults plenty of room to move about when they emerged.

At this temperature the time required from egg to adult was approximately eleven days. Some of the adults emerged nine days after being placed in the rearing jars and the rest within eleven days. As the flies emerged they were transferred from the rearing jars as previously described and either placed in a stock cage to be held for insecticidal tests or used for breeding purposes. It is advisable to take the flies out of the rearing jars soon after they emerge so as to avoid overcrowding. When large numbers of adults are allowed to stay in the rearing jars they are apt to become excited and mill about the top of the jars in an effort to escape. This often results in a high mortality.

To draw any conclusions from insecticidal tests which would shed light on the toxicity of a compound, the age and the condition of the insects used should be known. This appears to be particularly true of flies. We have found that the adult house fly bred under artificial conditions during the winter months is most active and resistant when it is four to five days old. In comparing results of insecticidal tests run during the summer with wild flies and those reared artificially it developed that winter flies, four or five days old, were more uniformly resistant to toxic compounds than wild summer flies and fully as resistant as controlled cultures developed during the summer. *As the age of the flies was of great importance they were kept in separate cages dependent on the date they emerged.*

After the fifth day flies which had not been used for insecticidal tests or transferred to the breeding cages were killed. The cage was then thoroughly washed with soap and water and dried. As the adults were continually emerging in the rearing jars it was necessary to use the cage immediately for a new supply. In this way a continuous cycle was maintained with a minimum number of cages.

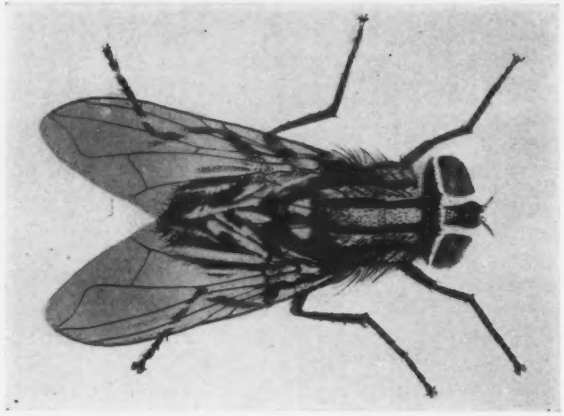
When flies were needed for insecticidal tests, the stock cage was taken to the testing chamber, the slide was raised slightly until the desired number of insects had escaped into the chamber, the slide was then lowered and the door of the chamber was closed.

Observations

A FEW observations on the activity and longevity of the adults during the winter months were made It was found that the adult fly was very active and resistant until about the eighth day after it emerged reaching what might be called its peak of activity and resistance about the fifth day. The longevity of the adult varied from two to thirty-three days with an arithmetical mean of thirteen plus days. It was also noted that the ovaries and testes developed rapidly and in some cases eggs were deposited by the flies in a little over three days after the time of emergence. Some investigators[2] have reported that the life of the adult house fly, reared during the warmer seasons, averages approximately twenty days and that the time required

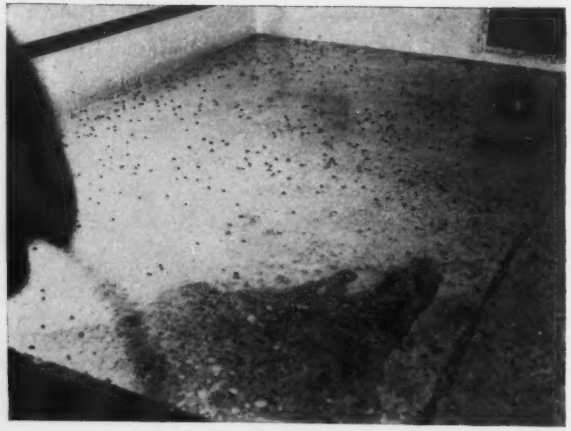
[2] Howard, House Flies, U. S. Dept. Agri. Farmers' Bulletin, 679, 9115; Glaser, Rearing Flies for Exp. Purposes with Biological Notes, J. Econ. Ent., 1924, XVII, 486-496.

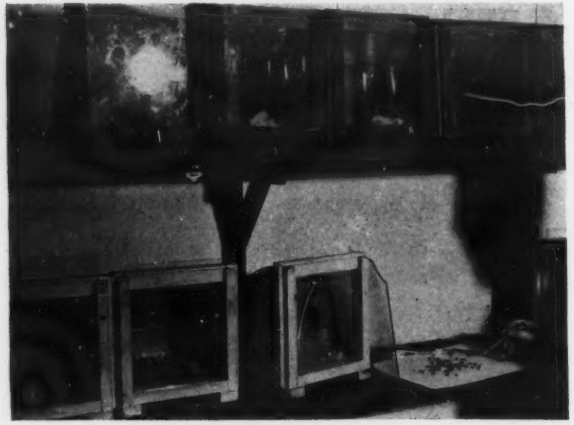
Below — The floor of the Peet-Grady Chamber ten minutes after spraying. These flies are carefully taken up and kept in an observation cage for 24 hours.



The Common House Fly, Musca Domestica.

Below—24 hours after the test, the "deads" in the cage are counted. They should show a minimum of 60%.





for the development of the ovaries and testes was longer by several days than observed in this case. Whether this comparatively short life cycle and rapid development was due to the fact that the flies were continually subjected to a constant temperature of 85° F., a special diet, absence of direct sunlight, or to other factors was not determined.

General Testing Considerations

ALTHOUGH a vast amount of work has been done on examining various compounds to determine their value as insecticides, the variations in the methods of testing these compounds and in the standards set up by the various investigators have made it almost impossible to draw valid comparisons between the results reported. In some cases insects have been tested by exposing them to the fumes of the particular compound being tested even though the compounds were relatively non-volatile and had to be heated in order to volatilize them. In others the compound being studied was dissolved in some oil carrier and dispersed by spraying. Still other determinations of insecticidal effectiveness have been made by completely immersing the insect to be tested in the material under consideration either at 100% concentration or at various dilutions. Obviously there is almost no common ground between these methods of testing. The desirability, however, of formulating some uniform testing procedure is evident and it is hoped that this paper will serve to stimulate other investigators to work upon this problem and to offer such alterations and improvements in technique as may seem desirable.

The most common pest the world over is the fly and the economic significance of the various species of stable flies is so well appreciated that a large program of research upon its control is being undertaken by the government. The annoyances caused by the house fly as well as the danger of infection due to its presence are pointed out in the advertisements of every magazine. The smaller and generally less prevalent fruit flies, gnats, etc., constitute a special problem in certain localities. Accordingly this paper deals specifically with methods of determining the effectiveness of compounds against flies. There is, of course, a great variation in the resistance of the different families of flies to the action of insecticides, but the relative resistance of these various families follows approximately the same curve against all insecticidal compounds.[3] Accordingly, once that curve has been established for all the families, which are sufficiently common to constitute pests, it is only necessary, in testing a new compound, to test it against one or two families in order to locate the curve of its efficiency. This paper makes no attempt to establish these curves but serves solely to point out a method of testing which is applicable to all families of flies.

The determination of toxicity against insects must be a purely biological test and, like all biological tests, it is subject to the very considerable variability which accompanies the reaction of the living organism to external effects and influences. This variability is innate in all creatures and cannot be controlled but the superficial variables which have heretofore been ignored, or too little considered, can be so accurately controlled that only the biological variable remains to remove such tests from strict reproducibility and the average will be just as certain as life insurance mortality tables.

The variables which this investigation has shown to possess the greatest significance are: time, temperature, humidity, insecticide concentration, carrier, fineness of spray, air conditions, angle of spray and condition of insect.

It is obvious that it is unfair to draw a comparison between two insecticidal compounds one of which is allowed to work upon the insect for twice as long a time as the other.

The importance of temperature control may easily be demonstrated by exposing two groups of insects from the same brood to the same insecticide at say 60° F. and 85° F. The higher percentage kill among the insects in the warmer chamber will be quickly appreciated.

The influence of humidity on the resistance of the insect to toxic compounds has been generally ignored in testing for insecticidal power. It does not have as great an effect as the temperature differential but it should be considered.

The fact that a higher concentration of material being tested in any given solution should produce a greater or more rapid kill does not require discussion.

The variations in effectiveness produced by variations in spray concentration are less easily demonstrable but undoubtedly just as certain for if the spray or vapor of any material under consideration be more attenuated in one instance than in another, there must be a higher concentration of insecticide in the area which has the greatest spray concentration.

Few carriers are inert but many studies have shown that there is a very considerable difference between the toxicity of these numerous relatively inert solvents.[2] *Accordingly, if one investigator reports on an insecticide using as a carrier a certain fraction of Pennsylvania Oil, another on the same material using a corresponding fraction of California Oil, there will be a disagreement. Similarly if one investigator uses a certain fraction of Pennsylvania Oil and another a different fraction of the same oil, they will obtain different results.*

Griffin, Richardson and Burdette[4] have shown that the size droplet produced by a sprayer has a very marked effect upon the insecticidal activity of the same material. Droplets of 5 to 10 mu produce about the maximum effect whereas droplets of 2 mu and smaller decrease the activity of the insecticide. These conclusions were based upon a study of contact sprays and insofar as the insecticide serves as a contact poison, they will apply to it. If, on the other hand, the insecticide functions in the vapor phase, the rate of evaporation will increase as the droplet size decreases and the reverse conclusion must be drawn. There are two ways of producing these variations in droplet size. One is by changing the type of atomizer or spray and the other by changing the pressure on the same sprayer. Since it is probable that the majority of tests will be made using the same sprayer, the variable which must be controlled is pressure.

By air conditions is meant whether the air is fresh or exhausted but this factor can probably be ignored because the chamber is always aired between tests.

The importance of the angle of the spray is closely related to spray concentration. If the spray enters the chamber from all directions there is much more uniform dispersion of the material under study. Also, of course, this factor is of importance if the spray comes in contact with the insects. If the material being examined is heavy and is sprayed downward upon the fly it is possible that its wings will shield its body or perhaps it would be more correct to say that if the spray were directed upward against the fly there would be greater likelihood of its coming in contact with the more vital parts of the insect.

Condition of the insect is one of the most important factors to be considered. It requires no elaboration to point out that an old fly or a vitiated fly or a very young fly or a fly in any way enfeebled will be more susceptible to the action of any toxic material than will a strong healthy individual.

[3] Moore & Graham. A study of the Toxicity of Kerosene, Jour. Econ. Ent., 1918, XI, 70-75.

[4] Griffin, Richardson & Burdette. Relation of Size of Oil Drops to Toxicity of Petroleum-Oil Emulsions to Aphids. Jour. of Agri. Research, Vol. 34, Pages 727-738.

The method of testing which this paper wishes to advocate is as follows:

Chamber: All fly tests should be carried out under conditions which at least approximate those existing in the fly's normal environment and for this purpose a chamber of sufficient size to enable the fly to move about freely and approximately as unrestrictedly as it normally would should be provided. A very satisfactory size has been found to be a 6 x 6 x 6 foot cube. In the studies upon which this paper is based, this chamber was made of wood with the bracing members on the outside, leaving the inside as free from projections, corners, ledges, etc., as possible. The inner surfaces were originally well painted with white enamel in order to prevent absorption, by the wood, of material being tested. This paint, however, adsorbed and absorbed a certain proportion of the oily materials being studied and, although it was carefully wiped out after each test, it was impossible to remove all traces of the preceding materials. Accordingly, the inside, including floor and ceiling, was lined with transite board, an asbestos composition, all corners were sealed with a Silex-sodium silicate cement and the walls were rendered as nearly non-absorbent to oils as possible by painting with sodium silicate. In the center of the ceiling a glass window was set with a light bulb above it for illumination. A tight closing door, large enough for a man to enter, was set in one wall and the adjoining walls were provided with glass windows in the center of each. These same walls each had four square ports 6 x 6 inches covered with wire gauze and provided with tight fitting hatches. Each wall had two one-half inch holes bored through it six inches from the ceiling and closed by corks.

Procedure: Each test was run upon a considerable number of flies, 5 days of age, never less than 100 and usually rather more but not exceeding about one per cubic foot. These were liberated in the chamber, which was kept at 85° F., and the insecticide was introduced through the one-half inch holes along the ceiling by means of a modified Devilbiss atomizer No. 152 with No. 631 cut-off.

The modification consisted in replacing the reservoir of the atomizer by a narrow 20 cc. cylinder made by cutting off an ordinary burette and sealing one end and in substituting a sufficiently long outlet tube to reach practically to the bottom of the cylinder, for the shorter one which is standard equipment.

By filling the atomizer above the lower end of the outlet tube and spraying until no more spray is delivered when the burette tube is in a vertical position, the zero point of the graduated atomizer is determined. If 12 cc. of insecticide is now added above this zero figure, the atomizer will deliver exactly 12 cc. before it returns to its zero and ceases to deliver. The accuracy of this equipment is about 0.1 cc.

This atomizer was operated at 12½ pounds pressure from a constant pressure airline controlled by a Hoke reducing valve. The amount of solution used in each test was 12 cc. and this was sprayed in about equal quantities through each top hole. The door and all ports were, of course, tightly closed during this procedure. The chamber was kept closed for ten minutes, during which time observations on the flies could be made through the windows to study the manner in which the material being tested was affecting them. At the end of ten minutes the square ports were all opened, a Buffalo exhaust fan turned on, and the number of flies still clinging to the walls and ceiling was counted through the side windows. The flies which had dropped were carefully gathered up and transferred to clean observation cages in which food and cotton gauze soaked in water had been placed. These cages had wooden bases 6 inches square, wire gauze back and sides and a sliding glass front.

It was considered that the flies still off the floor had escaped the action of the insecticide. The flies in their gauze cages were kept for twenty-four hours to observe whether there was ultimate recovery or death. At the end of this period, these insects were counted and the number still alive added to those which had been on the walls on the chamber. The Buffalo exhaust fan swept out the chamber by sucking air through it and afterward the floor and walls were thoroughly wiped off with an absorbent cloth.

The number of flies still off the floor at the end of the ten minute period divided by the total number liberated in the chamber gives the "knock-down in 10 minutes." The number lying dead in the observation cages after 24 hours divided by the total number originally taken gives the "percentage kill."

The variables thus far held in control are time, temperature, spray concentrations, pressure in spray, air conditions, angle of spray, and kind of insect. The condition of the insect is more particularly dependent upon how it has been bred and this phase of the problem is discussed in the first part of this paper.

Tests conducted following this procedure show a low average variation and it is entirely reasonable to presume that any investigator could obtain very uniform results following the method.

[The helpful criticism of Dr. W. S. Abbott of the U. S. Dept. of Agriculture and the suggestions embodied in the papers of Dr. R. W. Glaser of the Rockefeller Institute for Medical Research as well as his personal assistance were invaluable in the inauguration of this work.]



Testing Antiseptics and Disinfectants

Official Method of the Food & Drug Administration, U. S. Dept. of Agriculture, and the National Assn. of Insecticide & Disinfectant Mfrs. for the Determination of Phenol Coefficients

By G. L. A. RUEHLE and C. M. BREWER

Insecticide Control, Food & Drug Administration

ALL antiseptics and disinfectants shipped or offered for shipment in interstate commerce or offered for import into or export from the United States are subject to the provisions of the Federal insecticide act, the Federal food and drugs act, or both. In the enforcement of these acts it is necessary to determine the accuracy of the bactericidal and antiseptic claims made for such products. A number of methods have been developed for determining bactericidal effectiveness, but all of them possess certain disadvantages. Of course it is impossible to devise tests which will apply in all cases, but during the past 20 years the Insecticide and Fungicide Board and the Food and Drug Administration have found certain methods to be particularly well adapted to their purposes.

Confusion has arisen from the fact that, in many cases, manufacturers have not used the same methods of testing their products, as a basis for preparing their labels, as those used by the administration. This possibility of misunderstanding would be obviated if the same methods were employed by all, and many manufacturers, recognizing this, have requested information as to methods employed by the Food and Drug Administration. In view of this, it seemed desirable to publish them in a form which would make them generally available.

This circular, therefore, describes briefly the methods usually employed in the insecticide control laboratory for testing official samples of antiseptics and disinfectants. No attempt is made to review the literature of disinfectant testing in detail, but the most important papers relating to the methods here presented are cited.

Determination of Phenol Coefficient[1]

There are in general use at the present time three methods of determining the phenol coefficient; the Hygienic Laboratory (H. L.) method (*11*)[2], that of Rideal-Walker (R-W) (*7*), and the method developed by this laboratory. It had been realized for a long time, especially among qualified workers in the field of phenol coefficient testing, that there were numerous handicaps and minor deficiencies to be encountered in the routine manipulation of both the H. L. and R-W methods. Lloyd P. Shippen, formerly bacteriologist of the Insecticide and Fungicide Board, after much experience in the testing of disinfectants, devised a method for obtaining phenol coefficients, utilizing as its basis the best features of the two older tests. Under pressure of a great volume of routine work this method was first put into practice more than 15 years ago and found to be so satisfactory that it has come to be used for testing the great majority of the germicides now received at the Food and Drug Administration.

George F. Reddish, successor to Doctor Shippen, later published this method under the name, "The R-W modified method" (*5*).

The procedure of Shippen has been little changed, but the standards for the resistance of the test organisms, *Eberthella typhi* (Schröter) Buchanan,[3] and *Staphylococcus aureus* Rosenbach, have been firmly established and provisions for the use of other organisms have been added. The method, as here published, is designated the "Food and Drug Administration phenol coefficient method" or briefly, the "F. D. A. method."

The differences in the three methods are shown in Table 1. (See Next Page.)

There need be very little confusion arising from substituting the F. D. A. method as a test for products previously tested by either the R-W or the H. L. methods. The phenol coefficients of the large number of substances chemically related to phenol (the only type of disinfectants for which the H. L. method is accepted) (*11*) are, in most cases, practtically the same, whether tested by the F. D. A. or the H. L. method. Not only has continued use of the method in this laboratory shown this to be true (*2*), but collaborative experiments in five other laboratories (unpublished) confirm this fact. In comparing this method with the R-W method, similar results in general are obtained, although a somewhat lower coefficient usually results with coal-tar products having high coefficients. However, the higher results sometimes obtained by the R-W method may be misleading. R-W broth is not well adapted for the optimum growth of the test organism; hence nega-

[1] For the benefit of those unfamiliar with testing disinfectants a brief statement of the principles of determining phenol coefficients is made. The phenol coefficient is a figure expressing the ratio of the killing efficiency of a disinfectant as compared with that of phenol tested under identical conditions. The sample to be tested is diluted and the dilutions arranged in a series of decreasing concentrations (increasing dilutions). To these a specified amount of the test organism if broth culture is added. At the end of fixed periods of time a small portion of the mixture of diluted disinfectant and test organism is transferred to a nutrient culture medium and incubated. No growth in the subculture indicates that the organism has been killed. The greatest dilution (weakest concentration) of the disinfectant killing in a definite time period is divided by the greatest dilution of phenol killing in the same time period. This ratio is the phenol coefficient. It should be noted that the phenol coefficient is not based on a comparison of different time intervals but on a comparison of different concentrations acting for specified time periods.

[2] Italic numbers in parentheses refer to Literature Cited. Page 166.

[3] Throughout this paper the term *Eberthella typhi* is used for *Bacillus typhosus*, in accordance with the nomenclature adopted by the committee on classification of the Society of American Bacteriologists (*1*).

TABLE 1.—*Differences in media and manipulation of the three methods of determining phenol coefficient.*

Item	F. D. A. method	R-W method	H. L. method
Composition of medium	Peptone[2], 10 gm. Liebig's beef extract, 5 gm. Salt, 5 gm. Water, 1,000 c. c. Boil 20 minutes	Peptone[2], 20 gm. Liebig's beef extract, 10 gm. Salt, 10 gm. Water, 1,000 c. c. Boil 30 minutes	Peptone[1], 10 gm. Liebig's beef extract, 3 gm. Salt, 5 gm. Water, 1,000 c. c. Boil 15 minutes.
Acidity of medium	pH 6.8	+1.5. No definite pH	Unadjusted but pH between 6.0 and 7.0.
Amount of culture medium in tube.	10 c. c.	5 c. c.	10 c. c.
Amount of culture added to diluted disinfectant.	0.5 c. c. to 5.0 c. c.	0.5 c. c. to 5.0 c. c.	0.1 c. c. to 5.0 c. c.
Resistance of test culture to phenol (dilutions killing in 10 minutes but not in 5 minutes).	1-90	1-90 to 1-110	No limits stated.
Condition of tube in test	Plugged with cotton	Plugged with cotton	Open tubes.
Temperature of test	20° C.	15-18° C.	20° C.
Time intervals of the test	5, 10, and 15 minutes	2½, 5, 7½, and 10 minutes	5, 7½, 10, 12½, and 15 minutes.
Amount of medication mixture transferred (size of loop).	4 mm. loop (of No. 23 B. and S. gage wire).	4 mm. loop (of No. 27 Imperial gage wire).	Spiral loop (four spirals wrapped around a No. 13 B. and S. gage wire. Made of No. 23 B. and S. gage wire).
Calculation of phenol coefficient.	Highest dilution not killing in 5 minutes but killing in 10 minutes divided by same for phenol.	Highest dilution not killing in 5 minutes but killing in 7½ minutes divided by same for phenol.	Mathematical mean of highest dilutions showing no growth in 5, 10, and 15 minutes divided by same for phenol.

[1] Armour's. Special batch set aside for disinfectant testing.
[2] Allen and Hanbury's.

tive subcultures frequently indicate that the organism has been killed, when in fact it may have been only rendered incapable of growing in this culture medium.

The curtailment in labor, time, and material through the use of the F. D. A. method renders it particularly valuable where a large number of samples are involved. The F. D. A. method is considerably superior to the R-W method in producing consistent results (*4, 12*). The medium employed is better adapted to bacterial growth, and the technic is not restricted to the use of one test organism (*Eberthella typhi*) as is the case of the R-W and H. L. methods. Moreover, the stock cultures of *E. typhi* and *Staphylococcus aureus*, the organisms principally used in germicidal testing, remain sufficiently constant in their resistance to phenol, when grown on an adjusted medium, to necessitate but one phenol control, though two controls are used frequently as an additional check. This allows the use of nine dilutions of the unknown with 30-second intervals between transfers, or 14 when 20-second intervals are used. With a little practice, 20-second intervals allow sufficient time.

The F. D. A. method will be used by this laboratory in determining the dilutions at which miscible coal-tar disinfectants, and many other products to which the method is applicable, should be used for disinfecting purposes. As heretofore, this dilution should be at least equal in strength to a 5 per cent solution of phenol when tested against *Eberthella typhi* (20 times the phenol coefficient figure) and should be based on a phenol coefficient not higher than that obtained by the F. D. A. method.

Food and Drug Administration Method

THE test organism is a 22-26 hour culture of *Eberthella typhi* (Hopkins strain) incubated and grown in nutrient broth at 37° C. The broth contains the following ingredients: 5 gm. of Liebig's beef extract, 5 gm. of chemically pure sodium chloride, and 10 gm. of Armour's peptone (for disinfectant testing) in 1,000 c. c. of distilled water. The mixture is boiled for 20 minutes, made up to original weight (or volume) with distilled water, and adjusted with NaOH to pH 6.8 using the colorimetric method (*3, p. 405-421.*) It is then filtered through paper, tubed (10 c. c. to each tube), and the tubes plugged with cotton and sterilized at 15 pounds pressure for 40 minutes. The test culture is transferred daily in this medium for not more than one month. At the end of each month, a fresh transfer is made from the stock culture. The stock culture is carried on agar slants of the same composition as the broth medium plus 1½ per cent Bacto-Agar (Difco), adjusted to pH 7.2 to 7.4. This medium is also filtered, tubed, plugged with cotton, sterilized, and slanted. The stock culture is transferred once a month, and the test organism is taken from the month-old stock culture. When the test organism has not been transferred daily, it is advisable to make four or five consecutive daily transfers in broth before using it for testing purposes, to be reasonably sure of its conforming to the phenol resistance requirements. When only one transfer has been skipped the following transfer from the 48-hour culture is usually satisfactory for use after 24 hours.

Transfers are made with the platinum loop used in the test. Only cultures giving readings within the following limits are considered satisfactory:

Phenol:	5 minutes	10 minutes	15 minutes
1-90	+	+	0
1-100	+	+	+
or			
1-90	0	0	0
1-100	+	+	0

The following reading is that most usually obtained and is the most convenient:

Phenol:	5 minutes	10 minutes	15 minutes
1-90	+	0	0
1-100	+	+	+

Phenol

The phenol used must meet the requirements of the United States Pharmacopoeia, and in addition the congealing point must not be below 40° C. A 5 per cent solution may be used as a stock solution if kept in a relatively cool place in well-stoppered amber-colored bottles protected from the light. This 5 per cent solution should be standarized with decinormal bromine (described under "phenol" (*10, p. 283*), or with sodium bromide and bromate solution (*9, pp. 404-405*).

Apparatus

Besides a number of accurately graduated pipettes, 100-c. c. glass-stoppered graduates or volumetric flasks are almost essential for the making of correct dilutions. All pipettes and graduates should be standardized. The test tubes for containing the dilutions should be large enough to permit transfers being made without touching the sides with the transfer needle. Lipped pyrex (to withstand constant flaming) test tubes 25 by 150 mm. serve very well as these seeding or medication tubes. A water bath for holding the dilutions at the desired temperature must be provided. To maintain the temperature practically constant during the period of the test, the bath should be made so as to contain a relatively large volume per surface area, and should be insulated. The lid is made with well-spaced holes admitting the 25-mm. tube, but not the lip. The most convenient form of subculture tubes (tubes containing medium for incubating the tested organisms, as well as for growing the test culture) are ordinary non-lipped bacteriological test tubes 20 by 150 mm. The racks for holding the subculture tubes may be any convenient style. Blocks of wood with a series of holes bored in them are quite satisfactory. Dimensions depend somewhat on the size of the incubator, but the holes should be well spaced to insure quick selection and easy manipulation during the test. It is an added convenience to have the holes large enough to admit the medication tubes while dilutions are being made. The transfers are made with a 4-mm. (inside diameter) single loop of number 23 B. & S. gage platinum wire, 1½ to 3 inches long, set in a suitable holder such as an aluminum or glass rod approximately 0.5 cm. in diameter.

Procedure

One per cent stock dilutions of the substance to be tested (or any other convenient dilution of the disinfectant, depending on the strength) are made up, usually in the glass-stoppered cylinders or volumetric flasks from which the individual dilutions are then prepared. For rapid routine work, the final dilutions may be made directly in the medication tubes. In this case all excess over 5 c. c. must be removed. For more precise work and when high dilutions are required or volatile substances are dealt with, it is preferable to make up all of the dilutions in volumetric flasks and then transfer 5 c. c. of the final dilution to the medication tubes. These tubes containing 5 c. c. of each dilution (including the phenol control) are placed in the water bath at 20° C, for five minutes until the temperature of the bath is reached. Even slight variations in temperature may affect the results. The dilutions should cover the range of the killing limits of the disinfectant within 5- and 15-minute periods and should at the same time be spaced sufficiently close together to insure the desired accuracy. Five-tenths of a cubic centimeter of the test culture is then added to each of the dilutions at a time interval corresponding to the interval at which the transfers are to be made. Thus by the time 10 tubes have been seeded at 30-second intervals, four and one-half minutes will have elapsed and a 30-second interval intervenes before the transference to the subcultures is commenced. The culture is added from a graduated pipette holding sufficient culture to seed all the tubes in any one set. The pipette may be loosely plugged with cotton at the mouth end before sterilizing, as a precautionary measure. Unfiltered culture is used, but it should be thoroughly shaken 15 minutes before use and allowed to settle. The temperature of the culture should be practically that of the water bath before being added.

In inoculating the medication tubes they should be held in a slanting position, after removal from the bath, and the culture run in without the tip of the pipette touching the disinfectant. The tip may be allowed to rest against the side of the tube just above the surface of the liquid. The tubes are agitated gently but thoroughly after the addition of the culture to insure even distribution of the bacteria. Five minutes from the time of seeding the first medication tube, transfer 1 loopful of the mixture of culture and diluted disinfectant from the medication tube to the corresponding subculture tube. To facilitate transfer of uniform drops of the medication mixture, the loop is bent to form a slight angle with the stem and the medication tube is held at an angle of 60°. In other words, as the loop is withdrawn, its plane should be parallel with the surface of the liquid. At the end of 30 seconds, a loopful is transferred from the second medication tube to the second subculture tube and the process continued for each successive dilution. Five minutes from the time of making the first transfer, a second set of transfers is begun for the 10-minute period and finally repeated for the 15-minute period. Before each transfer the loop is heated to red heat in the Bunsen flame and the mouth of every tube is flamed. Sterilization of the loop is effected immediately after making the previous transfer (before replugging the tubes) to allow time for sufficient cooling. Time does not permit flaming the tubes after making the transfer. For this reason, care in transferring and seeding is necessary. Due caution is observed to prevent either the seeding pipette or the transfer needle from touching the sides or mouth of the medication tube; neither should cotton threads be found adhering to the sides or mouth of these. After completion of the transferring, the subculture tubes are incubated at 37° C. for 48 hours and results read. Microscopic examination usually suffices for this, but occasionally agglutination with antityphoid serum will aid in reading doubtful results. A 3-day incubation period or agar streak or microscopic examination may be resorted to in determining feeble growth, especially when organisms other than *Eberthella typhi* are used.

There are certain types of germicidal agents, such as many of the mercury compounds, which give very high results by phenol coefficient tests (*8*). Due to the high inhibitory value of such substances in preventing growth

in the subcultures these figures are frequently misleading. For germicides used in the disinfection of such objects as surgical instruments, this is of particular importance and must be taken into account. Failure to appreciate this characteristic of certain compounds is much more likely to lead to error when *Staphylococcus aureus* is used rather than *Eberthella typhi* as the test organism. That false values may not be obtained for products of this type, or for any other disinfectant giving suspiciously high results, the subcultures should contain very large amounts of medium (not less than 200 c. c.) or they should be retransferred by carrying at least 4 loopfuls from the first subculture to a second tube of broth, as recommended by Shippen (*8*).

Other groups of disinfectants in common use, for which the phenol coefficient method of testing is not well adapted, are those compounds containing chlorine as the active agent as well as oxidizing agents in general. These are affected so materially by the presence of organic matter that a phenol coefficient statement may grossly misrepresent their value under practical conditions of use and is very apt to be misleading to the consumer when placed on the label.

Calculation of Phenol Coefficient

THE results of the test are expressed in terms of the phenol coefficient. This represents the germicidal value of the diluted disinfectant as compared with the diluted phenol control. It is a figure obtained by dividing the numerical value of the greatest dilution (the denominator of the fraction expressing the dilution) of the disinfectant capable of killing *Eberthella typhi* in 10 minutes but not in 5 minutes, by the greatest dilution of phenol showing the same results; that is, by the phenol control. Thus, if the results were as follows:

Disinfectant (X):	5 minutes	10 minutes	15 minutes
1-300	0	0	0
1-325	+	0	0
1-350	+	0	0
1-375	+	+	0
1-400	+	+	+
Phenol:			
1-90	+	0	0
1-100	+	+	+

The phenol coefficient would be $\frac{350}{90} = 3.89$.

If none of the dilutions show growth in 5 minutes and killing in 10 minutes, the hypothetical dilution may be estimated in certain cases. This may be done only when any three consecutive dilutions show the following results:

The first, no growth in 5 minutes; the second, growth in 10 minutes but not in 15 minutes; and the third, growth in 15 minutes; for example:

If the results were as follows:

Disinfectant (X):	5 minutes	10 minutes	15 minutes
1-300	0	0	0
1-350	+	+	0
1-400	+	+	+
Phenol:			
1-90	0	0	0
1-100	+	+	0

the estimated phenol coefficient would be $\frac{325}{95} = 3.42$.

To avoid giving an impression of fictitious accuracy, the phenol coefficient is calculated to the nearest 0.1 unless the coefficient is less than 1.0. Thus, in the examples cited above, the phenol coefficients would be reported as 3.9 and 3.4 instead of 3.89 and 3.42.

In the preceding description, *Eberthella typhi* has been mentioned as the test organism. Wherever any expression of phenol coefficient occurs in literature, on labels, etc., it is assumed to mean the *E. typhi* phenol coefficient, unless otherwise stated. It is, however, the distinct intention of this department not to limit the test to the use of one organism. In fact, the test has been found adaptable to the use of a wide variety of bacterial species in the determination of phenol coefficients. In cases where some of the more strictly parasitic bacteria are used, modifications in media are necessitated, and, of course, a change in the phenol dilutions. The writers are not in a position at this time to prescribe the limits of resistance for many of the organisms that might be used. Therefore discussion of the exact technic is here omitted, with the exception of that for *Staphylococcus aureus*. Suggestions for the use of certain representative types may, however, be found in a paper by Reddish (*5*). When any test organism other than *E. typhi* is used it should be distinctly designated when stating the phenol coefficient.

S. aureus has been found to be an extremely useful organism for testing disinfectants and antiseptics and has been used for this purpose for a number of years. When substituted in the above test the technic remains exactly the same. The phenol dilutions, however, must be changed. The resistance of any strain of *S. aureus* used in this test must come within the following limits: At 20° C. it must survive a 1-60 dilution of phenol for 5 minutes and a 1-70 dilution for 15 minutes. The following is the minimal resistance that would be acceptable:

	5 minutes	10 minutes	15 minutes
Phenol:			
1-60	+	0	0
1-70	+	+	+

In the bacteriological examination of disinfectants, the *Eberthella typhi* and the *S. aureus* phenol coefficients give, in general, sufficient information to render tests with other organisms unnecessary, except in special instances. The commonly accepted criterion that disinfectants for general use be employed at a dilution equivalent to the germicidal efficiency of 5 per cent phenol against *E. typhi* (that is, 20 times the *E. typhi* phenol coefficient) allows a reasonable margin of safety for the destruction of infective agents likely to be the object of general disinfection about premises with the possible exception of *Mycobacterium tuberculosis*. *S. aureus*, due to its ubiquity, resistance and ever-ready tendency to cause infection, should always be employed in testing those substances recommended for personal use or as applications for wounds. If the disinfectant is recommended for use externally the temperature of test should be 20° C., but where such substances are recommended for use in the body cavities, such as for mouth washes, gargles, douches, etc., this test should be conducted at 37°. In such case the test should be designated "The F. D. A. method (special) *S. aureus*, 37° C." At body temperature the *S. aureus* should show the following resistance to phenol:

	5 minutes	10 minutes	15 minutes
1-80	+	0	0
1-90	+	+	+

Or

	5 minutes	10 minutes	15 minutes
1-80	+	0	0
1-90	+	+	0

The previous description of this method (*5*) differed from this only in allowing a slightly wider latitude in the resistance of the test organism against phenol.

Other Tests for Germicides[4]

THE limitations of the phenol coefficient make it necessary in some cases to judge the germicidal preparation by other tests or by additional tests. This is particularly true of preparations that are not completely soluble or miscible in water. It is also true of certain preparations designated as antiseptics.

Soluble antiseptics or antiseptics completely miscible with water can be tested, of course, by the procedure already described as the F. D. A. *Staphylococcus aureus* phenol coefficient method. In the testing of these substances, however, the phenol coefficient is not obtained necessarily, the phenol figure being used merely as a check of the resistance of the test organism. The information desired is the concentration which will kill in five minutes.

In an effort to simulate practical conditions, it is frequently advisable to conduct the tests in the presence of blood serum. Sterile horse serum in a concentration of 10 per cent is ordinarily used, both in the germicidal and inhibitory tests. Special claims and uses of a product, however, frequently indicate the desirability of a higher concentration of this organic enrichment.

The following methods designed for the testing of insoluble and immiscible products are in use in this laboratory at the present time. Some of them have been used for years and have been described previously (*6*). Laboratory tests, of course, cannot duplicate the exact conditions found in practice. The procedures here outlined, however, are as close an approach to practical conditions as is feasible in routine laboratory tests, and reveal the obviously useless preparations. It should be noted that inhibitory tests are considered along with other facts in interpreting whether or not the substance will be of value in practical use. It must be remembered that not only bacteriological but physiological and pharmacological facts frequently must be taken into consideration in judging many substances.

The Wet Filter-Paper Method

The wet filter-paper method is a germicidal test rather than a test of inhibitory properties. It is used when the substance to be tested is not soluble or completely miscible with water, or for substances that are to be used in high concentration, such as soaps, tooth pastes, suppositories, dyes, dusting powders, salves, and ointments. If the substance is to be used in the body cavities the test is carried out at 37° C.; if not, the test is carried out at 20°, or at room temperatures, and the temperature is recorded.

No. 2 Whatman filter paper is cut into pieces about 0.5 cm, square, and sterilized in a plugged test tube at temperatures below 170° C. to prevent charring. A suitable number of the paper squares are then impregnated with *Staphylococcus aureus*, or other test organisms, by immersion in a 24-hour broth culture of the organism. The culture must have the standard resistance required for phenol coefficient testing. The wet inoculated squares are then placed in the liquid or solid substance to be tested in such a way as to be completely covered and in intimate contact. At the end of 5 minutes, 10 minutes, 15 minutes, or 1 hour, or any other desired length of time, the wet papers are removed with a sterilized, stiff, platinum wire bent at a sharp angle to form a hook and placed in 10 c. c. of sterile broth. After as much of the disinfectant as possible has been removed (in the case of sticky substances, the needle must be used to aid in freeing the squares of adherent germicide) the squares are retransferred to a fresh tube of sterile broth (10 c. c.) and the tubes incubated at 37° for 48 hours, when they are observed for evidence of growth.

It will be noted that in this test resubcultures are always required, since the first tube of broth to which the filter-paper squares have been added frequently contains sufficient antiseptic to exhibit inhibition of growth. Both tubes of broth are usually incubated.

The Dry Filter-Paper Method

The dry filter-paper method is used in tests of fumigants and of oils that are to be used where moisture is absent. It is similar to the wet filter-paper test, squares of paper being used that have been impregnated as described under the test above, except the squares are dried for two days in a sterile Petri dish in the 37° C. incubator. This test can be used successfully only with organisms capable of resisting the drying. *Eberthella typhi* will not withstand the drying. In the writers' work *Staphylococcus aureus* is the usual test organism. The inoculated dried paper squares may be used at any time after drying up to 30 days, but the resistance of the organism at no time should fall so low that it is incapable of withstanding a 1-80 dilution of phenol for five minutes at 20°. It should be noted that control tests with non-medicated squares should always be carried out to test the viability of the test organism. As in the West filter-paper method, resubcultures are always necessary.

The Agar-Plate Method

The agar-plate method is a test for inhibitory properties and is used for substances remaining in contact, with the body in the absence of serous body fluids. Examples of substances which may be tested by this method are salves, dusting powders, creams, plasters, pads, adhesive tape, catgut, and suppositories. The test organism ordinarily used is *Staphylococcus aureus*, but for special purposes the test may be used with any organism capable of growing on agar. The agar is of the same composition as that previously described for carrying stock cultures of the test organism.

Fifteen to twenty cubic centimeters of agar is melted and cooled to 42°-45° C. To this is added 0.1 c. c. of a 24-hour broth culture of the test organism. The inoculated agar is then poured into sterile Petri plate and allowed to harden. As soon as the agar has hardened, the test substance is placed in intimate contact with the surface of the agar. If a salve, it is first warmed just sufficiently to soften it and thus secure a complete peripheral contact. As a control, warmed sterile petrolatum may be placed on another portion of the plate. The plates are incubated 24-48 hours under unglazed porcelain tops at 37° C. and then are examined for evidence of inhibition. If the preparation is antiseptic or inhibitory, a zone of clear agar will be noted around the place where the substance has been in contact and the width of the zone will indicate the diffusibility of the inhibitory (antiseptic) agent. If there is no inhibition, growth of the test organism will be observed adjacent to and even under the test substance.

The Serum Agar-Plate Method

Preparations recommended for use on open wounds, cuts, etc., will be effective only if they exhibit activity in the presence of serous fluids. In testing such preparations the agar-plate method is modified by the addition of 10 per cent sterile horse serum to the agar.

[4] According to current usage the word "antiseptic" has two meanings; to kill bacteria or to prevent their growth, depending upon the use of the product. Products such as salves, ointments, and dressings that remain in contact with the body for long periods of time, may be designated properly as antiseptics if they inhibit the growth of bacteria. On the other hand, mouth washes, douches, gargles, and preparations of like nature are in contact with the body for but brief periods of time and exert negligible inhibitory action. These may be described properly as antiseptics only if they will destroy bacteria under the conditions of use; that is, in the dilutions recommended and in a period of time comparable to that in which they would have an opportunity to act when used as directed.

The Agar Cup-Plate Method[5]

The agar cup-plate method is merely a variation of the agar-plate method. It is to be used on products liquid at the temperature of the test. The agar or serum agar is inoculated as in the agar-plate method. Before the agar cools, a depression or cup is made in the medium by standing a sterile flat-bottomed glass tube, 1.5 cm. in diameter, in the liquefied agar. On hardening, the glass tube is removed by slightly twisting and pulling at the same time. Insertion of a sterile wire down the side of the tube for the introduction of air will eliminate much of the cracking of the agar. Another method of preparing the agar cup-plate is to allow the medium to harden and then cut out a disk in the agar, by means of a cork borer, 1.5 cm. in diameter. One or two drops of melted agar are placed in the cup to seal cracks or crevices. After the agar cup-plate is prepared, 6 drops of the liquid to be tested are placed in the cup and the plate incubated under an unglazed porcelain top for 24 to 48 hours. If there is a clear zone about the cup, the substance under test has inhibitory properties. Here, as well as in the agar-plate test, the agar in the clear zone may be tested for growth by subculture in broth to indicate whether the action is germicidal or merely inhibitory.

Tests in the Presence of Organic Matter

In general, the tests outlined above will take care of the bulk of the preparations coming to this laboratory. However, special tests may be required to determine the value of products recommended for certain purposes. For instance, recommendations on the label may make advisable the use of various additions of organic matter, such as increased amounts of peptone or the addition of gelatin, blood ascitic fluid, saliva, urine, or feces, depending upon the information desired.

Method Applicable in a Given Case

Substance	Method Applicable
Soluble disinfectants:	
A. Preparations for general use.	Phenol coefficient — *E. typhi* at 20° C.
B. Preparations for antiseptic use.	Phenol coefficient technic —*S. aureus* 20° C. or 37° C. as indicated.
C. Preparations for surgical instruments.	Phenol coefficient technic —*S. aureus* 20° C.
Insoluble and concentrated disinfectants:	
A. Preparations for general use (oils, tarry substances, powders, lime, etc.).	Wet filter paper—*E. typhi* and *S. aureus*. Room temperature.
B. Preparations for use on dry surfaces (spraying oils, sweeping compounds, powders, lime).	Dried filter paper—*S. aureus*. Room temperature.
C. Preparations for fumigation (filter paper and exposed to gas in confined space).	Wet filter paper—*E. typhi* and *S. aureus;* room temperature. Dried filter paper—*S. aureus;* room temperature. (Extension of time may be indicated.).
Soluble and liquid antiseptics:	
A. Preparations to be applied for a short time (washes, mouth washes, gargles, douches, etc.).	Phenol coefficient technic —*S. aureus* 20° C. or 37° C. as indicated.
B. Preparations for use on open wounds, etc. (washes)	Phenol coefficient technic —*S. aureus* 20° C. or 37° C. as indicated. (Tested in presence of 10 per cent serum.)
C. Preparations remaining on site of application (dyes, wet dressings, rubbing preparations, etc.).	Agar cup-plate.
D. Preparations for use on open wounds, etc. (dyes, wet dressings, etc.).	Serum agar cup-plate.
E. Preparations remaining on site of application but claiming germicidal properties.	Wet filter paper—*S. aureus* 37° C. Extension of time may be indicated.
Solid soluble antiseptics:	
A. Lozenges, tablets, etc.	Wet filter paper—*S. aureus* 20° C. or 37° C. as incated. Note: Saturated aqueous solution or in dilution indicated.
Insoluble and concentrated antiseptics:	
A. Preparations remaining on site of application (dusting powders, ointments, salves, suppositories, plasters, dressings, etc.)	Agar plate.
B. Preparations remaining on site of application but claiming germicidal properties.	Wet filter paper—*S. aureus* 37° C. Extension of time may be indicated.
C. Preparations for use on open wounds, etc.	Serum agar plate.
Antiseptic materials, appliances, etc.:	
A. Bandages, dressings, catgut, etc.	Serum agar plate.
B. Tape, pads, etc.	Agar plate.
Solid and semisolid antiseptics:	
A. Preparations used for a short time (soaps, soap powders, tooth pastes, tooth powders, etc.).	Wet filter paper—*S. aureus* 20° C. or 37° C. as indicated. (Note: Undiluted and diluted with equal parts water or diluted with sufficient water to form a thick paste or heavy emulsion.)

[5] The authors are indebted to L. C. Himebaugh for this method.

[6] In the cases where chlorine compounds are used for this purpose the effectiveness is usually judged on the basis of "available" chlorine content.

[7] Intestinal antiseptics do not readily lend themselves to laboratory tests. When medical opinion concerning the physiological and therapeutic properties of such preparations is to be confirmed by the results of bacteriological tests, the products may be considered to be germicidal only when tested in the presence of liberal amounts of organic matter, such as saliva, feces, etc.

Disinfectants and antiseptics for use in the absence of organic matter:
A. Preparations for drinking water.[6]

Phenol coefficient technic —*E. typhi* 20° C. (Note: 0.1 c. c. of culture to 10 c. c. of diluted preparation.)

Intestinal antiseptics.[7]

Figures Useful in Making Dilutions in Testing Disinfectants (11)

(5 c. c. of disinfectant+95 c. c. of distilled water= solution A)

Dilution	Solution A C. c.		Distilled water C. c.		Solution A C. c.		Distilled water C. c.		Solution A C. c.		Distilled water C. c.
1:20	= 20	+	0	or	10	+	0	or	4	+	0
1:25	= 20	+	5	or	10	+	2½	or	4	+	1
1:30	= 20	+	10	or	10	+	5	or	4	+	2
1:35	= 20	+	15	or	10	+	7½	or	4	+	3
1:40	= 20	+	20	or	10	+	10	or	4	+	4
1:45	= 20	+	25	or	10	+	12½	or	4	+	5
1:50	= 20	+	30	or	10	+	15	or	4	+	6
1:55	= 20	+	35	or	10	+	17½	or	4	+	7
1:60	= 20	+	40	or	10	+	20	or	4	+	8
1:65	= 20	+	45	or	10	+	22½	or	4	+	9
1:70	= 20	+	50	or	10	+	25	or	4	+	10
1:80	= 20	+	60	or	10	+	30	or	4	+	12
1:90	= 20	+	70	or	10	+	35	or	4	+	14
1:100	= 20	+	80	or	10	+	40	or	4	+	16
1:110	= 20	+	90	or	10	+	45	or	4	+	18
1:120	= 20	+	100	or	10	+	50	or	4	+	20
1:130	= 20	+	110	or	10	+	55	or	4	+	22
1:140	= 20	+	120	or	10	+	60	or	4	+	24
1:150	= 20	+	130	or	10	+	65	or	4	+	26
1:160	= 20	+	140	or	10	+	70	or	4	+	28
1:170	= 20	+	150	or	10	+	75	or	4	+	30
1:180	= 20	+	160	or	10	+	80	or	4	+	32
1:200	= 20	+	180	or	10	+	90	or	4	+	36
1:200	= 20	+	180	or	4	+	36	or	2	+	18
1:225	= 20	+	205	or	4	+	41	or	2	+	20½
1:250	= 20	+	230	or	4	+	46	or	2	+	23
1:275	= 20	+	255	or	4	+	51	or	2	+	25½
1:300	= 20	+	280	or	4	+	56	or	2	+	28
1:325	= 20	+	305	or	4	+	61	or	2	+	30½
1:350	= 20	+	330	or	4	+	66	or	2	+	33
1:375	= 20	+	355	or	4	+	71	or	2	+	35½
1:400	= 20	+	380	or	4	+	76	or	2	+	38
1:450	= 20	+	430	or	4	+	86	or	2	+	43
1:500	= 20	+	480	or	4	+	96	or	2	+	48

(1 c. c. of disinfectant+99 c. c. of distilled water= solution B)

Dilution	Solution B C. c.		Distilled water C. c.		Solution B C. c.		Distilled water C. c.		Solution B C. c.		Distilled water C. c.
1:100	= 100	+	0	or	10	+	0	or			
1:110	= 100	+	10	or	10	+	1	or			
1:120	= 100	+	20	or	10	+	2	or			
1:130	= 100	+	30	or	10	+	3	or			
1:140	= 100	+	40	or	10	+	4	or			
1:150	= 100	+	50	or	10	+	5	or			
1:160	= 100	+	60	or	10	+	6	or			
1:180	= 100	+	80	or	10	+	8	or			
1:200	= 100	+	100	or	10	+	10	or	4	+	4
1:225	= 100	+	125	or	10	+	12½	or	4	+	5
1:250	= 100	+	150	or	10	+	15	or	4	+	6
1:275	= 100	+	175	or	10	+	17½	or	4	+	7
1:300	= 100	+	200	or	10	+	20	or	4	+	8
1:325	= 100	+	225	or	10	+	22½	or	4	+	9

Dilution	Solution B C. c.		Distilled water C. c.		Solution B C. c.		Distilled water C. c.		Solution B C. c.		Distilled water C. c.
1:350	= 100	+	250	or	10	+	25	or	4	+	10
1:375	= 100	+	275	or	10	+	27½	or	4	+	11
1:400	= 100	+	300	or	10	+	30	or	4	+	12
1:400	= 10	+	30	or	4	+	12	or	2	+	6
1:450	= 10	+	35	or	4	+	14	or	2	+	7
1:500	= 10	+	40	or	4	+	16	or	2	+	8
1:550	= 10	+	45	or	4	+	18	or	2	+	9
1:600	= 10	+	50	or	4	+	20	or	2	+	10
1:650	= 10	+	55	or	4	+	22	or	2	+	11
1:700	= 10	+	60	or	4	+	24	or	2	+	12
1:750	= 10	+	65	or	4	+	26	or	2	+	13
1:800	= 10	+	70	or	4	+	28	or	2	+	14
1:850	= 10	+	75	or	4	+	30	or	2	+	15
1:900	= 10	+	80	or	4	+	32	or	2	+	16
1:900	= 5	+	40	or	4	+	32	or	2	+	16
1:1,000	= 5	+	45	or	4	+	36	or	2	+	18
1:1,100	= 5	+	50	or	4	+	40	or	2	+	20
1:1,200	= 5	+	55	or	4	+	44	or	2	+	22
1:1,300	= 5	+	60	or	4	+	48	or	2	+	24
1:1,400	= 5	+	65	or	4	+	52	or	2	+	26
1:1,500	= 5	+	70	or	4	+	56	or	2	+	28
1:1,600	= 5	+	75	or	4	+	60	or	2	+	30
1:1,700	= 5	+	80	or	4	+	64	or	2	+	32
1:1,800	= 5	+	85	or	4	+	68	or	2	+	34
1:2,000	= 5	+	95	or	4	+	76	or	2	+	38
1:2,200	= 5	+	105	or	4	+	84	or	2	+	42
1:2,400	= 5	+	115	or	4	+	92	or	2	+	46
1:2,600	= 5	+	125	or	4	+	100	or	2	+	50
1:2,800	= 5	+	135	or	4	+	108	or	2	+	54
1:3,000	= 5	+	145	or	4	+	116	or	2	+	58
1:3,200	= 5	+	155	or	4	+	124	or	2	+	62

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How To Buy Sanitary Specialties

What the Jobber or Janitor Supply House Should Look for and What He Should Avoid in Purchasing Bulk Sanitary Supplies

AS A preface to considering what a buyer of sanitary supplies *should* look for in purchasing these products, stop for a minute to ask what he *does* look for. The answer, far too often we are afraid,—is the lowest price. A lesson which seems very hard to learn is that the buyer who insists upon buying at the lowest price gets, in nine cases out of ten, products which are distinctly inferior. By giving his business always to the lowest bidder, he finds in the end that he is far too often doing business with the lowest fringe of the supply trade, for it is obvious that the manufacturer of honest merchandise cannot compete on price terms with the cheapest of his cut-price competitors. There are times, of course, when a cheap product is desired for a particular purpose, and then price considerations must rule. To buy all supplies, however, at all times, on a basis of price alone, is to run the risk of getting products which are expensive to handle at any price. Poorly made goods may even damage property in addition to failing in their task. Fooling with cheap, poorly-made untested products has lost many a profitable account.

Powdered Soaps, Soap Powders, Scouring Powders

AS POWDERED soaps are some times confused with soap powders, it might be well to draw a line of distinction between the two. Powdered Soaps consist almost entirely of pure soap of very low moisture content ground to a powder. Because they are pure soap, naturally they are priced higher than soap powder compounds. They are used principally in the cleansing and finishing of textiles and fine fabrics and in those situations where mild, yet highly active detergents are indicated. They are sometimes used (in solution) in the cleansing of fine wood finishes in offices and hotels, though in such cases soap chips are perhaps to be preferred because of the ease in handling and soluble qualities. Powdered soaps go principally into tooth paste and powder, powdered hand soaps, toilet articles, and other products used chiefly on the human body.

THESE suggestions on points to watch in the purchase of soaps and sanitary specialties have been compiled from a series of articles prepared by a group of recognized experts in their particular fields. The publishers wish to express their indebtedness to the following men for their assistance in preparation of this material: L. B. Schwarcz, Clifton Chemical Co.; C. C. Baird, Baird & McGuire, Inc.; Henry Nelson, Chemical Supply Co.; Joseph Fuld, Fuld Bros., Inc.; E. S. Pattison, Mathieson Alkali Works; D. J. O'Sullivan, Armour & Co., and T. V. DuBois, DuBois Soap Co.

Soap Powders are suggested for what may be classified as "rough work"; the cleansing of wood floors, tile, machinery, etc. Soap powders usually consist of a small percentage of pure soap, at least 10%, seldom more than 20%. To the powdered (anhydrous) soap are added various alkalies such as trisodium phosphate, sodium carbonate (soda ash) and borax. The effect of these alkalies and other similar ones is to cut and loosen grease and dirt. They also act as water softeners.

Just how much soap and how much alkali a soap powder should contain is a moot question, but it should always be remembered that soap itself is the most costly ingredient, and the higher percentage of soap contained in powder, the higher the cost of manufacture. However, as stated above, a good soap powder for general purposes need not contain more than 20% pure soap. Anything less than 10% of soap reduces sudsing and detergent value and places the full burden of cleansing on the alkalies contained in the powder.

Scouring Powders (Cleansers) are compounds of powdered soap, mineral abrasive and sodium carbonate. Mineral abrasives used are volcanic ash, which is a form of rock composed of finely powdered, light, porous, siliceous material, powdered silica, feldspar and other minute sharp-face minerals. The abrasive used

most generally is volcanic ash. The activity of any scouring powder depends on the type and coarseness of the abrasive used. This varies between abrasive powders that must pass through a number 200 mesh down to those passing through number 60 mesh screens. Cleansing action is increased by the addition of a small amount of alkali, usually sodium carbonate, which serves to loosen and cut grease and dirt.

The ideal scouring powder should contain approximately 90% abrasive which should be coarse enough, have enough "teeth," to pick up dirt, yet still be fine and soft enough not to scratch ordinary surfaces. A good scouring powder should be dry and free flowing, should not contain more than 5% moisture. If it contains more than 5% moisture, it will likely become lumpy and hard to handle. The purchaser should always insist on dry powder and free flowing qualities.

Scouring powders are low-price items, and it therefore becomes important to realize that there are wide differences between them. Fairly wide differences in price are therefore perfectly understandable. Indeed, in many cases, the higher priced product will prove both the better and the more economical in the end.

Right here is where the seller's standing enters. Certain scouring powders have established the right to the respect of every buyer. They are well made, they are uniform from barrel to barrel, and they claim to be only what they really are,—not universal cleansers, but good, serviceable scouring powders. Nearly every buyer is acquainted with at least one of these powders. It is well to be very cautious about using new and unheard of scouring powders without careful practical tests. Buy from a reliable maker, observe the work which the powder does, as compared with whatever you may have used before and as compared with the statements that the salesman may have made when you placed the order. It is frequently wise to pay a little more per pound if it will give you a powder which does your work better, more safely, or at a lower cost per cleaning. But don't pay such higher price until you are convinced that the powder is really doing this better job for you.

Liquid Soap

IT HAS usually been a common practice to judge liquid soap solely on the basis of anhydrous content. However, it is easy to be misguided by following this procedure, as the anhydrous content is only one part of the picture, and there are other very important features of a liquid soap that should be investigated before trying to make final judgment as to quality.

As a comparison, it would be just as unwise to purchase a diamond exclusively on the basis of carat weight. One two-carat stone may be worth a few hundred dollars and another weighing the same may cost several thousand dollars, due to shape, cut, flawlessness, etc. A similar analogy could be applied to any number of other products with the same result, viz:—That the worth of an item can rarely be judged by one single yardstick.

Even if liquid soap is purchased according to U. S. Government or some other specification, one is not always assured of getting a strictly high quality soap, as there are loopholes which are not covered. For instance, most specifications call for pure vegetable oil and in some cases specify a coconut oil soap made with potash or potash and soda. However, the grade of coconut oil is seldom, if ever, mentioned, and as a result, Manila, Ceylon, fatty acids or other cheap oils may be used, all of which are less desirable than pure Cochin coconut oil.

Then again although a liquid soap may pass the laboratory test in regard to leaving no objectionable odor on the skin *at the time of testing*, it often occurs that a poorly made soap develops a rancid and in some cases a nauseous medicinal odor. This is due to the fact that some commercial caustic potash contains small amounts of potassium chlorate and other salts, which under certain conditions react on the caproic, capric and butyric acids in the coconut oil to form other acids such as crotonic and acryllic, which cause the unpleasant odor referred to. Unless the soapmaker knows through long experience, how to take care of this condition, the undesirable odors may develop.

In most specifications, a potash, or potash and soda soap is permitted, with a result that when there is a sufficient variation in price between these two caustics, too much of the latter may be used, which makes a soap that tends to thicken and become unduly cloudy, especially if the minimum free alkali is lacking.

Fine cooking and expert soap making are very much akin. Two cooks can use exactly the same ingredients and one of them will turn out a tasty dish that will delight the palate of an epicure, whereas another cook using identically the same ingredients will evolve a concoction at which a cat would turn up his nose. There is a good deal of good old fashioned cookery in being able to turn out a high quality liquid soap. The fine points in the ability to manufacture a quality soap are not learned in a day or year, or are they gleaned from books. Some old time liquid soap makers guard their methods and secrets jealously.

A few makers of the outstanding quality liquid soap allow it to age in cypress tanks for some time. For reasons not completely explainable by chemistry, liquid soap like fine whiskey and old violins improve with age. Aged liquid soap is softer, more gentle, and smoother.

Let us try to ascertain what other characteristics constitute an outstanding liquid soap. As anhydrous content was previously mentioned, it may be well to dwell on this before proceeding further. A 15% to 20% soap content usually gives good satisfaction. An inadequate concentration such as 8%, 10% of 12%, as a rule will not give sufficient lather under ordinary conditions and as a result the user is apt to overcorrect the poor sudsing qualities of the soap by working the dispenser considerably more times than necessary. Therefore the theoretical saving of using a low strength liquid soap is usually more than offset by the larger quantity of soap used.

On the other hand a soap of 22% or 25% content or higher is not recommended, as it has a tendency to leave the hands greasy if not thoroughly rinsed off. Then again the thicker the soap is, the more likely it is to clog the dispensers. Jobbers as a rule should not recommend a 40% soap to their customers, unless they feel assured that it will be accurately mixed with water before the dispensers are filled. Porters are notoriously inept even in plain arithmetic. For instance, one concern with branches all over the country, buys a 40% concentrated soap. On a check up of the diluted liquid soap that was actually contained in the various dispensers, it was found that the concentration ranged from 8% all the way up to 40%, — even though all dilution instructions were exactly the same! In one case the porter forgot the water, and in the other he all but forgot the soap.

It is satisfactory for the jobber to utilize base and concentrated soap if he has the time and facilities for reducing them to the proper concentration. Many, however, prefer to buy the finished product from the manufacturer. Though it may cost a trifle more, it is often worth it.

There is probably no one "best" liquid soap, as the proper type depends entirely upon the particular purpose for which it is to be used. For public places, where the cost is the main factor, a pure coconut oil soap may be used, as this type gives the maximum lather. In offices, or where there are a large number of girls employed, it is sometimes preferable to supply a soap made from a mixture of coconut and olive, or other bland oil, as a straight coconut oil product has a tendency to roughen some delicate skins. Such complaints are more apt to occur in winter. In many cases the soap may not be at fault, due to the fact that plain water or even cold weather alone may cause chapping, and the blame is erroneously placed on the soap. In factories where the workers get a lot of grease and dirt on their hands, an ordinary coconut oil liquid soap may not cut the grease fast enough and the addition of a percentage of a mild detergent is helpful.

In general, the higher the olive oil content, the softer the liquid soap. On the other hand a pure olive oil soap gives a sparse lather unless highly concentrated. The concentrated type on the other hand will tend to gum up the ordinary soap dispenser. However, in hospital maternity wards special dispensers are used and a pure concentrated olive oil soap works satisfactorily.

In the foregoing discussion we have tried to emphasize that materials and soap strength alone are not all-sufficient. It is important, of course, to know what type soap you are getting and in exactly what concentration. There are other quality factors of paramount importance also, however, which depend on experience, skill, equipment and integrity of your supplier.

Deodorizing Blocks

WITH an almost endless number of brands of paradichlorbenzene products on the market, all designed for deodorization, moth control and other sanitary uses, the jobber is very frequently puzzled as to which brand or brands to handle because he does not always know what constitutes a genuinely first-class article. With all kinds of blocks, cakes and crystals available, some good and some not so good, his uncertainty may urge him to buy the cheapest and in this, he frequently makes a grave error.

The first requisite of a strictly high-grade para block is that it shall be made solely from pure paradichlorbenzene. Admixtures of other products, such as naphthalene and inert fillers in a para block reduce its quality and are primarily to cheapen the block. Naphthalene blocks and crystals unquestionably have their place in the sanitary products field, especially in moth control, but the addition of naphthalene to paradichlorbenzene blocks is distinctly not good practice.

The addition of naphthalene or useless fillers such as talc, salt, or other cheap crystalline or powdered material, is rather easily detected by examining the block after it has been in contact with the air for a week or so. If naphthalene is present, the surface will be pitted as the naphthalene has a slower rate of evaporation than the para. If an inert powder or other filler has been added, this will begin to deposit on the surface around the block after it has started to gasify. A pure para block correctly manufac-

tured will evaporate evenly without pitting or leaving any residue behind.

Another factor which is important to the jobber who handles para products, is the appearance of the block and the relation of this to its quality and price. Good para blocks should have an even density, and a smooth, even surface. The best blocks are made in various types of presses from cold para crystals. The greater the pressure, the better the block is ordinarily. A well-pressed block should be dense and heavy for its size. A poorly pressed block may look large and look like a lot for the money, but it is probably light in weight and contains less para than the good block. Therefore, size in the block may misguide the buyer unless he knows what it means. Weight is the proper basis on which to judge value. Furthermore, a light loosely packed block will evaporate too rapidly, too unevenly, and will crumble and fall apart.

The earliest procedure in the manufacture of blocks was to melt up the pardichlorbenzene crystals and then pour the highly volatile liquid into molds to cool and harden. The chief advantage of this method is that the cost of equipment is extremely small. The loss of para by evaporation while hot, which runs up to 25 per cent, and the loss of perfume added to the hot liquid, which runs up to 60 per cent in some cases, is highly wasteful. Furthermore, air pockets are likely to form and the inside of such blocks are frequently crumbly and brittle. It is also almost impossible to secure uniform blocks. This type of block does not give great satisfaction to users.

The economical method for making small blocks is by use of the machine or foot press. This is for the three and four ounce sizes. Although the foot-press blocks are not as well pressed as a machine-pressed block, they are superior to the molded blocks. Of course, it is impossible to make the 1½ and 2½ pound sizes on a foot-press. The pressure needed to press these large blocks runs well into the tons and it must be secured by especially built automatic presses or hydraulic presses. The latest development in this field is the powerful electric automatic press which gives a pressure of from 60 to 100 tons, and will turn out 25 to 60 blocks per minute. These blocks can be recognized by their firmness, density, uniformity, and their long-lasting qualities when used.

In selecting blocks, care should be taken that the perfume is of the correct type or it will not be satisfactory. Some perfumes last only during a very short period of the life of the block. Sometimes they are used in too great a quantity and make the outside of the block wet and greasy. The same thing may occur where the wrong kind of perfume material is used. This "sweating" not only makes the block greasy to handle, but will cause running and may streak walls as well as making the container very messy. The perfume used with para should have approximately the same rate of evaporation as the block itself and should last until the last few crystals with a uniform intensity of odor. If the block has no perfume when the para is half or nearly all evaporated, it is evidence that the wrong type perfume has been used.

In the matter of coloring para blocks, it may be said that the tendency of late has been toward using more plain white blocks. The possibility of staining and of the color residue being left in holders has accounted for this. However, where the three and four ounce cakes are to be used exclusively for urinal deodorization, color adds to the appearance and may "match" the odor. However, in general, tinted blocks are not recommended for moth control work or where they are used in wall holders.

It has been said that the best blocks are made from pure paradichlorbenzene. Of course, blocks made wholly from naphthalene are available and also serve a definite purpose. They are considerably cheaper than para blocks owing to the fact that naphthalene sells for less than half of the price of paradichlorbenzene. Where a cheap product must be furnished, naphthalene blocks offer a suitable substitute for para blocks. The naphthalene evaporates less rapidly than para, its odor is not as intense, and it does not cover other odors as well for this reason. For moth control work, naphthalene and para are held on approximately an equal plane by the Department of Agriculture.

Coal-Tar Disinfectants

AN IMPORTANT feature of coal-tar disinfectants is that their strength or power to kill harmful disease bacteria may be accurately determined. As a result of this determination the consumer may know exactly how to dilute the fluid and apply it for specific purposes. Disinfectants made from coal-tar are available in strengths ranging from two to twenty times that of pure carbolic acid. They mix freely with water to form emulsions and are suitable for application in the form of washing, mopping or scrubbing solutions.

In buying a coal-tar disinfectant in ordinary quantities the buyer should insist upon having from the manufacturer a written statement of the bacteriological strength (phenol coefficient) of the disinfectant supplied. This should agree identically with the statement on the container. In buying large quantities, a certified copy of

the bacteriological test should be supplied by the seller. This test sheet shows the actual phenol coefficient against the germ of typhoid fever. The test method used today is that of the Food and Drug Administration of the U. S. Department of Agriculture, and supersedes the Rideal-Walker and Hygienic Laboratory tests which were formerly in use. In addition to the test sheet, the manufacturer should declare the phenol coefficient on the container, as well as on the invoice. This is for the buyer's protection. If such statements are not made, the responsibility for the strength and quality of the product is shifted from the manufacturer to the buyer. The Federal Law requires too that the name and percentage of inert ingredients shall also appear on the label or container. These are simple but important things to look for.

Coal-tar disinfectants contain water, usually not over 10%. As water is without germ killing power, it has to be listed as an inert ingredient, both by name and percentage. Disinfectants with an excessive amount of water should be avoided, as well as those which contain such adulterants as mineral oil (kerosene). The important factor of course is the phenol coefficient, for that is the true index of the worth of the product. Buyers should *demand* it, not only on containers shipped to them but on invoices too.

When coal-tar disinfectants are properly manufactured they should be free from sediment and the emulsions should not show any separation of oil when diluted with water, that is oily drops floating on top. The odor should be characteristic of tar and suggest cleanliness. The correct amount of water to use in preparing solutions for general use is arrived at by multiplying the coefficient by twenty. Thus a disinfectant with a coefficient of six should be diluted with 120 parts of water, and one with a coefficient of twenty with 400 parts of water. It is obvious that the higher the coefficient, the greater the amount of water to be used. Disinfectants with phenol coefficients of 20, when diluted for use, cost on the average less than a cent a gallon.

Cresol compounds are disinfectants of the so-called soluble type. They are prepared from coal-tar and are excellent germicides. Two grades are available; one meeting the specifications of the U. S. Pharmacopoeia and known as *Liquor Cresolis Compositus, U. S. P.*, and the other which is sold as technical or commercial cresol compound. These disinfectants are largely used by hospitals, veterinarians and surgeons. As they are clear in solution, operating instruments immersed in a bath of the fluid may be clearly seen. The phenol coefficient of the U. S. P. compound varies between 3 and 3½, while the technical or commercial grade has a coefficient of around four. The odor of cresol compounds is suggestive of that of cresol or cresylic acid. Cresol compounds, meeting the specifications of the Bureau of Animal Industry, U. S. Department of Agriculture, are used in disinfecting premises which have contained diseased cattle.

Pine Oil Disinfectants

THE problem of choosing between the many brands of pine oil disinfectant, offered at so many different prices, is aggravated by the fact that the quality of the disinfectant really cannot be determined except by a bacteriological test, and few buyers have the facilities necessary to make such a test. Nevertheless, there are ways by which the buyer can protect himself and make sure that the pine oil disinfectant offered him is the grade he wishes to handle. To begin with, the Department of Agriculture specifies that a pure pine oil disinfectant shall be made only from pine oil, soap, and water. Consequently, a product that contains hydrocarbon oil (kerosene) cannot be legally sold as a "pine oil disinfectant". Such a product, to be within the law, must be sold under a different name, and the seller is required to make specific mention on his label of the percentage of hydrocarbon oil in his product, and to declare it as "inert matter", since hydrocarbon oil does not possess disinfectant qualities.

Reputable manufacturers of pine oil disinfectants are always willing to give a certified analysis, and this, when given in writing, is the best assurance a buyer can have, provided he knows what to ask for. A dependable pine oil disinfectant, when made with rosin, should contain approximately 70% steam distilled pine oil, 21% rosin soap, with inert matter (water) of not over 9%. Pure pine oil disinfectants can also be made with vegetable oil soaps, instead of rosin soaps. In that case the percentage of soap may be as low as 9% and the water as much as 21%. Since water has no disinfectant value, it must always be declared on the label as "inert matter".

Another thing to look for when buying pine oil disinfectant, is a statement of coefficiency, which indicates germ killing strength. The Government requires that this appear on all packages. Pine oil disinfectant is usually offered with a coefficiency of either 3 or 4, and the difference in the wholesale price between these two grades is about five cents per gallon.

Do not be misled by the color of the disinfectant. Some sellers would have you believe that color determines the efficiency and germicidal quality of the disinfectant. That is an erroneous belief. Pure pine oil disinfectants, made with rosin soap, often are darker in color than those made with vegetable oil soaps, yet the coeffi-

ciency of both commercial grades is practically the same.

There are pine oil disinfectants on the market made with destructive distilled pine oil instead of steam distilled pine oil. The former have a rather pungent odor and are cheaper than those made with genuine steam distilled pine oil. There are also pine oil disinfectants which are made with pine oil of inferior quality. Naturally, these, too, can be offered at lower prices than the dependable grades which are made with pine oil of predetermined specifications.

It is thus readily apparent that pine oil disinfectants may be had in different qualities and at many varying prices. The safe course to follow, obviously, is to insist that your supplier furnish you with disinfectants of proven quality. Ask him to give you in writing:

1. A certified analysis showing percentages of pine oil, soap, and water.
2. A guarantee that the disinfectant is made from *steam* distilled pine oil according to specifications by the leading producers.
3. A guaranteed coefficiency appearing on every package. This coefficiency should be either 3 or 4 by the F. D. A. Method. (Food and Drug Administration Method.)
4. Proof of his business standing—which after all is your ultimate guarantee of his dependability.

Chlorine Disinfectants

THERE is no perfect disinfectant for every purpose, any more than there is a single perfect detergent. Thus the user of disinfectants should be careful to weigh the advantages and disadvantages of various type products for the purpose which he has in mind. A dependable chlorine disinfectant, for example, while unsuitable for some purposes, has other fields of usefulness for which other disinfectants, such as phenol and its derivatives, are clearly unsuitable. On food-handling equipment, for instance, a sodium hypochlorite solution provides the following advantages:

1. It is non-poisonous in concentrations of high germicidal efficiency.
2. It is colorless, leaving no stain or other objectionable residue (on the contrary, it acts as a stain remover).
3. After it has done its work, its only decomposition product is sodium chloride (common salt).
4. It acts as a deodorant as well as a disinfectant, the chlorine odor disappearing rapidly after use.
5. It has the approval of health authorities for use in food-handling establishments.
6. It is inexpensive enough to permit frequent use on all surfaces subject to bacterial contamination.
7. It kills bacteria rapidly and effectively.

In some cases, confusion has arisen from the attempt to express the germicidal effectiveness of chlorine disinfectants in terms of the "phenol coefficient". As the U. S. Department of Agriculture has pointed out, under certain conditions a chlorine disinfectant such as sodium hypochlorite is many times more powerful than phenol. Under other conditions, such as in the presence of an excess of organic matter, it may be less effective. As a means of comparing germicidal efficiency in practice "phenol coefficient" is meaningless when applied to chlorine solutions.

In the effort to make practical utilization of the germicidal power of chlorine, the following general types of products have been developed:

1. Chlorinated line
2. Liquid sodium hypochlorite solutions
3. Chloramine products
4. Alkaline powders, primarily detergents, containing a small percentage of "available chlorine"
5. True calcium hypochlorite powder
6. Powder yielding sodium hypochlorite solutions when added to water

In solution, all of these products are "oxidizing agents", and act upon bacteria as a result of this oxidizing ability. With the exception of the chloramine products, *hypochlorite ions* (OCl) formed in solution provide this oxidizing power. The capacity of these products to do an oxidizing job is commonly expressed as "*available chlorine*", which is simply the ratio of their oxidizing capacity to that of pure chlorine itself.

As disinfecting solutions are usually made up with some fixed concentration of available chlorine (100 p.p.m. = 100 parts available chlorine to 1,000,000 parts of solution), the available chlorine of any product is a rough measure of its value as a disinfectant. Taken in comparison with the weight and cost of a product, it gives the first rough basis for comparison.

The fact that two solutions are made up to contain the same amount of available chlorine, however, should not be taken to mean that they are equally effective in destroying bacteria. "Available chlorine" is simply a measure of the *oxidizing capacity* of a product. Now two tanks of water may have the same *capacity*, but other factors may make it easier to get water out of one than out of the other. Similarly, two solutions may be prepared containing the same available chlorine, but a more rapid release of this oxidizing capacity may make one of them decidedly superior in germicidal speed and effectiveness.

"Well why not pick the product that acts the

quickest and let it go at that?" you may ask. But the answer, unfortunately, is not so simple as that. As a matter of fact, perhaps the most important question of all that must be asked when choosing a chlorine disinfectant is this: "Is it stable and uniform?" No matter what other properties a product may have, it will appeal to few users if they cannot be sure of its action at the time and place it is most needed. It is this lack of stability and uniformity that have always been the chief drawbacks of chlorinated lime and old fashioned liquid sources of hypochlorite.

True calcium hypochlorite, however, is a powder which retains its strength both in dry form and in solution. With this product, it is possible to prepare calcium or sodium hypochlorite solutions of definite concentration and germicidal effectiveness.

The use of chlorine disinfectants is somewhat limited, of course, by their tendency to corrode. On glass-lined tanks, stainless steel, or non-metallic equipment, they can be used without fear, but on tinned iron, tinned copper, nickel and other surfaces, some modification of the solution is necessary to protect against corrosion. As the alkalinity of the solution is raised, its corrosive tendency is decreased. However, the rate of germicidal action also falls, so that a longer period of contact is required. In every case, however, a satisfactory balance can be obtained. For safe and practical general use, a prepared hypochlorite is desirable; one with an alkaline balance sufficiently high to reduce the corrosion hazard, while leaving the germicidal speed as rapid as conditions of use requre.

Metal Polish

THERE are five types of metal polish, each of which has recognized advantages and disadvantages for certain different types of work. The ideal polish (if one existed), would necessarily have the good qualities of all five types and none of the bad. Since no one polish can do everything equally well, two or more metal polishes are generally needed. And many building superintendents find an advantage in having paste polishes, powdered polishes and several different liquid polishes. Metal polishes are generally divided into five types:

1. Water Base
2. Petroleum Base
3. Petroleum Base (non-inflammable)
4. Paste
5. Powder

There is no way to judge the quality of a polish except by comparative test, but even such tests are often misleading unless one is comparing polishes of similar type upon identical jobs. Polishes depend upon the combined action of chemicals and abrasives. While it is impossible here to go into all of the peculiarities of each ingredient used in polishes, it may be said generally that the more solid the polish, the more it requires rubbing. And the more liquid it is, the more it depends upon chemical action. There are, however, some exceptions to this general statement.

The results which usually interest polish buyers are (1) Depth of luster; (2) Speed in application; (3) Ease in removing; (4) Lasting quality of luster; (5) Adaptability for special surfaces (rough and hot). Below is a table arranged to show how the different types of polish compare on the basis of the above points.

TYPE	Speed in Applying	Depth of Luster	Ease in Removing	Lasting Luster	Adaptability for Special Surfaces rough	Adaptability for Special Surfaces hot
Water Base	A	C	C	C	C	C
Petroleum Non-Inflammable	B	A	A	A	A	D
Petroleum	C	B	A	B	A	D
Paste	D	C	D	B	X	A
Powder	D	D	C	B	X	B

A—Excellent B—Good C—Fair D—Poor X—Unsuitable

There are other commonsense considerations which should be kept in mind when choosing or recommending metal polishes. They are:

Sliminess, stickiness or gumminess in polishes usually indicate presence of a film around the abrasive particles which retards their polishing action.

Very thin polishes are usually wasteful.

Inflammable polishes are always a fire hazard.

Strong smelling polishes are usually objectionable for indoor use.

Free acid in polishes usually causes speedy recorrosion, and may also pit or etch metals.

Caking of polishes is usually wasteful of both time and the polish.

Harsh abrasives in polishes may scratch soft metals. They often ruin nickle.

Poisonous ingredients in polishes are always objectionable around foods and children.

Excess alkali in polishes frequently injures the nails and skin of users.

Federal Specifications*

Automobile Soap (P-S-561)

Automobile soap shall be a pure vegetable oil paste soap containing no free alkali or acid, shall be relatively free from matter insoluble in alcohol, shall be homogeneous, free from adulterants of any kind, and without objectionable odor.

Matter volatile at 105° C. shall not exceed 55 per cent. Deliveries which yield more than 55 per cent of volatile matter will be rejected without further test. The sum of free alkali and total matter insoluble in alcohol shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.2 per cent. Free acid, calculated as oleic, shall not exceed 0.2 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Unsaponified matter shall not exceed 4 per cent. Rosin shall not be present. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 50 per cent of volatile matter.

Chip Soap (P-S-566)

Chip soap shall be a soap in chip form made from soda and fats, without rosin, as free as possible from water and all substances other than true soap, of a light uniform color, free from disagreeable odor, and suitable for high-grade laundry work with soft water, when the presence of alkaline salts is objectionable.

Matter volatile at 105° C. shall not exceed 15 percent. Deliveries which yield more than 15 per cent of volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 3 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Matter soluble in water shall not exceed 0.4 per cent. Titer of the mixed fatty acids prepared from the soap must be not less than 39° C. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 10 per cent of volatile matter.

Cake Grit Soap (P-S-571)

Cake grit soap shall be of the following types as specified: Type A—for fine work, such as glass and enamel; Type B—for scouring and scrubbing.

Type A—

Matter volatile at 105° to 110° C. shall not exceed 4 per cent. Deliveries which yield more than 4 per cent of volatile matter shall be rejected without further test. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 88 per cent nor more than 93 per cent. The insoluble siliceous material shall consist of not less than 90 per cent of ground feldspar. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5 per cent. Rosin, sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of the matter volatile at 105° to 110° C., insoluble siliceous material, and alkali as alkaline salts. The cakes shall be well compressed and of a satisfactory degree of friability, which shall not be materially affected or lessened after immersion in or contact with water. The material shall not scratch glass or enameled surfaces. The material shall be unscented and shall be of a light gray or white color.

Type B—

Matter volatile at 105° to 110° C. shall not exceed 5 per cent. Deliveries which yield more than 5 per cent of volatile matter shall be rejected without further test. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 3 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall not be less than 75 nor more than 85 per cent. The insoluble siliceous material shall be mainly quartz, and it all must pass through a No. 100 sieve. Rosin, sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of the

* General and Detailed Requirements as specified in the Standard Stock Catalogue of the U. S. Federal Specifications Board.

matter volatile at 105° to 110° C., insoluble siliceous material, and alkali as alkaline salts. The cakes shall be well compressed and of a satisfactory degree of friability, which shall not be materially affected or lessened after immersion in or contact with water. The material shall be unscented and shall be of a light gray or white color.

Hand Grit Soap (P-S-576)

Hand-grit soap shall be a cake soap containing about one-third its weight of clean, finely divided insoluble siliceous matter, as free as possible from water, uncolored, unscented unless otherwise specified, thoroughly saponified, and well compressed in firm, smooth cakes.

Matter volatile at 105° C. shall not exceed 25 per cent. Deliveries which yield more than 25 per cent of volatile matter will be rejected without further test. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 25 nor more than 40 per cent. The insoluble siliceous material shall not yield more than 2 per cent of residue retained on a No. 100 sieve and not more than 10 per cent of residue retained on a No. 200 sieve. Rosin, sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of matter volatile at 105° C., insoluble siliceous material, and alkali as alkaline salts. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 25 per cent of matter volatile at 105° C.

Liquid Laundry Soap (P-S-586)

Liquid soap for laundry use shall be a clear solution of pure potash (or potash and soda) soap with or without glycerol or alcohol and containing not less than 12 per cent by weight of a volatile organic solvent or a mixture of such solvents. It shall yield a clear solution on mixing with soft water, shall quickly form a satisfactory lather, shall have no injurious effect and leave no objectionable odor on fabrics. Materials washed with this soap shall have, after drying, a soft feel and not appear more boardy or stiff than when washed with soft water.

The material shall be a clear solution, shall yield a clear, homogeneous solution on mixing with soft water, shall quickly form a satisfactory lather, and shall leave no objectionable odor on fabric. Total anhydrous soap shall be not less than the equivalent of 24 per cent potash soap. Total matter insoluble in alcohol shall not exceed 0.5 per cent. Free alkali, calculated as potassium hydroxide (KOH), shall not exceed 0.05 per cent. Chloride, calculated as potassium chloride (KCl), shall not exceed 0.3 per cent. Total matter insoluble in water shall not exceed 0.1 per cent. Volatile organic solvent shall be not less than 12 per cent. All constituents shall be calculated on the basis of the original sample. Fabric washed with the liquid soap shall show no more shrinkage or felting than occurs with similar fabric washed with soft water at the same temperature. Colored materials when washed with this soap shall not fade more than when washed the same number of times at the same temperature with soft water alone.

Ordinary Laundry Soap (P-S-591)

Ordinary laundry soap shall be a well-made, uniformly mixed laundry or common soap, made from soda and fats, with no excessive proportion of rosin and a moderate amount of matter insoluble in alcohol; shall be free from makeweights, and shall be suitable for use with moderately hard water for general cleaning and laundry purposes.

Odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on dishes or other objects after washing with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of the material under the above conditions shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an air-tight, closed container for comparison with samples from deliveries.

Matter volatile at 105° C. shall not exceed 36 per cent. Deliveries which yield more than 36 per cent volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol and sodium chloride, shall be not less than 2 per cent nor more than 10 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Matter insoluble in water shall not exceed 1 per cent. Rosin shall not exceed 25 per cent. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 34 per cent of volatile matter.

Powdered Laundry Soap (P-S-596)

Powdered soap for laundry use shall be a soap in powdered form made from soda and fats, without rosin, as free as possible from water and all substances other than true soap, of a light uniform color, free from disagreeable odor, and suitable for high-grade laundry work with soft water, when the presence of alkaline salts is objectionable.

Matter volatile at 105° C. shall not exceed 7 per cent. Deliveries which yield more than 7 per cent of matter volatile at 105° C. will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 3 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Matter insoluble in water shall not exceed 0.4 per cent. Titer of the mixed fatty acids prepared from the soap shall be not less than 39° C. Residue retained on a No. 12 sieve shall not exceed 1.5 per cent. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 5 per cent of volatile matter.

Soap Powder (P-S-606)

Soap powder shall be a uniform mixture of soap and sodium carbonate in powdered form. It shall be readily soluble in tepid water, shall contain no free caustic alkali or inert filler, and shall be free from objectionable odor.

Anhydrous soap shall be not less than 15 per cent. Sodium carbonate (Na_2CO_3) shall be not less than 30 per cent. The aggregate of anhydrous soap and sodium carbonate shall be not less than 55 per cent.

Salt-Water Soap (P-S-611)

Salt-water soap shall be a soap well made from pure coconut oil, pure palm kernel oil, or a mixture thereof, and the necessary alkali. It shall be entirely soluble in both sea water and fresh water and shall make a suitable lather.

Matter volatile at 105° C. shall not exceed 55 per cent. Deliveries which yield more than 55 per cent of volatile matter will be rejected without further test. Total matter insoluble in alcohol shall be not less than 2 per cent nor more than 3 per cent and shall consist, essentially, of sodium carbonate (Na_2CO_3). Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Matter insoluble in water shall not exceed 0.5 per cent. Chloride, calculated as sodium chloride (NaCl), shall be not less than 2.5 per cent nor more than 3.5 per cent. Rosin, sugar, and foreign matter shall not be present. The acid number of the mixed fatty acids prepared from the soap shall be not less than 240. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 55 per cent of volatile matter.

White Floating Toilet Soap (P-S-616)

White, floating soap shall be a cake soap, at least as good in every respect as one made from soda and a mixture of high-grade tallow with 25 to 30 per cent of coconut oil, of good light color, without objectionable odor, thoroughly saponified, and so prepared as to float on water.

Matter volatile at 105° C. shall not exceed 34 per cent. Deliveries which yield more than 34 per cent volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 2.0 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.15 per cent. Chloride, calculated as sodium chloride (NaCl), shall not exceed 1 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Rosin, sugar, and foreign matter shall not be present. The acid number of the mixed fatty acids prepared from the soap shall be not less than 212. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 28 per cent of volatile matter.

Liquid Toilet Soap (P-S-618)

Liquid toilet soap shall be a clear solution of pure vegetable oil potash (or potash and soda) soap with or without glycerol or alcohol, suitably perfumed, and free from all foreign matter. It shall quickly form a satisfactory lather and have no injurious effect and leave no objectionable odor on the skin.

The material shall be a clear solution, free from objectionable odor, other than from coconut oil, and shall form a satisfactory lather. Total anhydrous soap shall be not less than the equivalent of 15 per cent potash soap. Total matter insoluble in alcohol shall not exceed 0.5 per cent. Free alkali calculated as potassium hydroxide (KOH) shall not exceed 0.05 per cent. Chloride calculated as potassium chloride (KCl) shall not exceed 0.3 per cent. More than traces of sulphates and sugar shall not be present. All constituents shall be calculated on the basis of the original sample.

Milled Toilet Soap (P-S-621)

Milled toilet soap shall be a high grade, milled cake soap, as free as possible from water, either colored or uncolored, and mildly perfumed unless otherwise specified, thoroughly saponified, well compressed in firm, smooth cakes of a size and shape specified in the contract. It should lather freely when used with cold, soft, water.

Matter volatile at 105° C. shall not exceed 15 per cent. Deliveries which yield more than 15 per cent of volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 1.5 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Unsaponified saponifiable matter shall not exceed 0.3 per cent. Rosin, sugar, and foreign matter shall not be present. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 15 per cent of matter volatile at 105° C.

Caustic Soda for Cleaning (P-S-631)

Caustic soda shall be furnished in flake, coarsely powdered, or granular form, as specified by the purchaser. It shall contain not less than 90 per cent sodium hydroxide (NaOH) and not more than 4 per cent carbonate, calculated as sodium carbonate (Na_2CO_3).

Laundry Soda, (Washing Soda), (P-S-641)

Laundry soda shall be a white uniform powder composed of sodium carbonate and sodium bicarbonate. Total alkalinity, calculated as Na_2O, shall be not less than 39 per cent or more than 41 per cent. Matter insoluble in water shall not exceed 0.1 per cent.

Mechanics' Hand Detergent (P-D-221)

Detergent for mechanics' use shall be of the following types, as specified: Type I—hand grit paste soap; Type II—hand scouring powder. It shall be a uniform mixture in paste or powder form, as specified, and shall be satisfactory for removing oil, grease, paint, printing inks, and other occupational soil from the hands of automobile mechanics, machinists, and other operatives without harmful effect on the skin.

Type I—(Hand grit paste soap).

The material shall be a uniform paste. The odor shall not be objectionable. If desired, shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an airtight, closed container for comparison with samples from deliveries. Volatile matter at 105° to 110° C. shall not exceed 55 per cent. Deliveries which yield more than 55 per cent of volatile matter shall be rejected without further test. Alkaline salts, calculated as sodium carbonate (Na_2CO_3), shall not be more than 2 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.02 per cent. Free acid, calculated as oleic acid, shall not exceed 0.2 per cent. Anhydrous soap, calculated as soda soap, shall be not less than 8 per cent nor more than 16 per cent. Insoluble siliceous matter shall be not less than 25 per cent nor more than 50 per cent and shall conform to the following fineness requirements:

Retained on—	Minimum *Percent*	Maximum *Percent*
No. 40 sieve	—	0
No. 60 sieve	10	20
No. 80 sieve	30	45
No. 100 sieve	35	55
No. 200 sieve	60	—

The material shall retain the consistency of a firm paste after keeping in a closed container for 6 hours at 30° to 32° C. (86° to 89.6° F.). The material shall not deteriorate when kept in an airtight container. The percentage of matter volatile at 105° to 110° C. will be computed on the basis of the grit paste soap as received, but all other constituents will be calculated on the basis of material containing 50 per cent of matter volatile at 105° to 110° C.

Type II—(Hand scouring powder).

The material shall be a uniform, free-flowing powder. The odor shall not be objectionable. If desired, shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an airtight, closed container for comparison with samples from deliveries. Volatile matter at 105° to 110° C. shall not exceed 5 per cent. Deliveries which yield more than 5 per cent of volatile matter shall be rejected without further test. Alkaline salts, calculated as sodium carbonate (Na_2CO_3), shall be not less than 2 per cent nor more than 5 per cent. The alkaline salts shall consist of borax, sodium carbonate or a mixture thereof. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Free acid, calculated as oleic acid, shall not exceed 0.2 per cent. Anhydrous soap, calculated as soda soap, shall be not less than 17 per cent. Insoluble siliceous matter shall be not less than 60 per cent nor more than 76 per cent and shall conform to the following fineness requirements:

Retained on—	Maximum *Percent*
No. 60 sieve	5
No. 100 sieve	30
No. 200 sieve	60

Rosin or sugar shall not be present. All constituents shall be reported on the basis of the sample as received.

Sweeping Compound (P-C-591)

Sweeping compound shall consist of a uniform mixture of the materials as specified for each type and shall be artificially colored or uncolored as specified by the purchaser. If desired, shall conform to the color of a sample mutually agreed upon by buyer and seller.

Type I—(Mineral-oil compound).

Odor shall not be objectionable. If desired shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an airtight, closed container for comparison with samples from deliveries. The material shall, on use, not stain flooring or adjacent surfaces. The material shall not give off flammable vapors when tested according to section F-2b. Material not meeting the test for flammable vapors will be rejected without further test. Water (matter volatile at 105-110° C.) shall be not more than 10 per cent by weight. Refined mineral oil (such as paraffin oil) shall be not less than 15 per cent and not more than 20 per cent by weight. Clean, fine, sharp sand or feldspar sand shall be not less than 35 per cent and not more than 50 per cent by weight. Not more than 1 per cent of sand shall be retained on a No. 20 sieve when tested according to section F-2j. Fatty oils shall not be present. The remainder shall be finely ground sawdust. Not more than 1 per cent of sawdust shall be retained on a No. 8 sieve when tested according to section F-2j.

Type II—(Water-wax-emulsion compound)

Odor shall not be objectionable. If desired shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an airtight, closed container for comparison with samples from deliveries. The material shall not stain flooring surfaces on which it may be used. The material shall not give off flammable vapors when tested according to section F-2b. Material not meeting the test for flammable vapors will be rejected without further test. Water (matter volatile at 105-110° C.) shall be not more than 12 per cent by weight. Clean, fine, sharp sand, or feldspar sand shall be not less than 60 per cent and not more than 70 per cent by weight. Not more than 1 per cent of sand shall be retained on a No. 20 sieve when tested according to section F-2j. Finely ground sawdust shall be not less than 5 per cent and not more than 10 per cent by weight. Not more than 1 per cent of sawdust shall be retained on a No. 8 sieve when tested according to section F-2j. The remainder shall be waxes and emulsifying agents.

Paste Metal Polish (P-P-556)

Polishing paste shall consist of a uniformly mixed paste of such a consistency as to be easily applied. It shall be free from disagreeable odor and shall have good cleansing and polishing properties. It shall be free from acid, cyanides, or other ingredients having injurious effect upon metal, and shall not scratch metal.

Silver Polish (P-P-571)

Silver polish, types A, (liquid), and B, (paste), shall consist of finely ground, white, diatomaceous or infusorial earth, suitably compounded with a neutral soap. Silver polish, type C, (powder), shall consist solely of finely ground, white, diatomaceous or infusorial earth, free from adulterants or foreign matter. Types A and B shall be free from acids or cyanides. All types of silver polish shall have good cleansing and polishing properties and shall contain abrasives of such fineness that 100 per cent will pass through a standard No. 200 sieve.

Stove Polish (P-P-576)

Stove polish shall produce a deep, lustrous black color when applied as directed by the manufacturer. It shall produce no odors upon burning and shall produce a durable coating that will not readily be burned off.

Type I.—Polish, stove, liquid, shall be of such consistency that the addition of a fluid will not be necessary in order to make it free-flowing. The vehicle of the polish shall be a non-inflammable liquid.

Type II.—Polish, stove, paste, shall be non-inflammable and shall be of such consistency that it can be readily applied.

Type III.—Polish, stove, powder, shall readily form a paste with water, and shall be non-inflammable.

Type IV.—Polish, stove, cake, shall readily disintegrate in water and form a paste and shall be non-inflammable.

Scouring Powder for Floors (P-P-591)

Scouring powder for floors shall be of the following types, as specified: Type A—for fine marble floors; Type B—for tile or ceramic and terazzo floors; Type C—soap scouring compound.

Type A—(For fine marble floors).

Matter volatile at 105° to 110° C. shall not exceed 10 per cent. Deliveries which yield

more than 10 per cent of volatile matter shall be rejected without further test. The sum of sodium carbonate (Na_2CO_3) and anhydrous soap shall not exceed 7 per cent nor be less than 2 per cent. Free alkali, calculated as sodium hydroxide (NaOH) shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 85 per cent nor more than 95 per cent. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5 per cent. The material shall not scratch nor discolor marble. The material shall be a uniform powder, shall be unscented, and shall be of a light gray or white color.

Type B—(For tile or ceramic and terrazzo floors).

Matter volatile at 105° to 110° C. shall not exceed 10 per cent. Deliveries which yield more than 10 per cent of volatile matter shall be rejected without further test. The sum of sodium carbonate (Na_2CO_3) and anhydrous soap shall not be less than 2 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 80 per cent nor more than 95 per cent. The insoluble siliceous material shall not yield more than 1 per cent of residue retained on a No. 60 sieve and not more than 10 per cent of residue retained on a No. 80 sieve. The material shall be a uniform powder, shall be unscented, and shall be of a light-gray or white color.

Type C—(Soap scouring compound).

Matter volatile at 105° to 110° C. shall not exceed 6 per cent. Deliveries which yield more than 6 per cent of volatile matter shall be rejected without further test. Carbonated alkali, calculated as sodium carbonate (Na_2CO_3) shall not be less than 6 per cent nor more than 20 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Anhydrous soap shall be not less than 3 per cent nor more than 10 per cent. Insoluble siliceous material shall be not less than 60 per cent nor more than 90 per cent. The insoluble siliceous material shall not yield more than 1 per cent of residue retained on a No. 60 sieve and not more than 10 per cent of residue retained on a No. 80 sieve. The material shall be a uniform powder, shall be unscented, and shall be light-gray or white in color.

Scouring Powder for Glass (P-P-596)

Shall be a fine, uniform powder, and shall be suitable for cleaning highly polished glass surfaces which must transmit light efficiently, such as cabin windows and windshields of aircraft. The material shall clean glass surfaces satisfactorily without scratching the glass or leaving an oily or other film on the surface. The material shall be a uniform, free-flowing powder, shall be scented or unscented, and shall be white or light gray in color. Matter volatile at 105° to 110° C. shall not exceed 4 per cent. Deliveries which yield more than 4 per cent of volatile matter shall be rejected without further test. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate (Na_2CO_3), shall not exceed 5 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 85 per cent nor more than 93 per cent, and shall consist of ground feldspar or other insoluble siliceous abrasive that will not scratch highly polished glass surfaces. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5 per cent. Rosin, sugar, and foreign matter shall not be present. Anhydrous soda soap shall be not less than 4 per cent and shall be within 1 per cent of the difference between 100 and the sum of the matter volatile at 105° to 110° C., insoluble siliceous material, and alkali as alkaline salts.

Technical Trisodium Phosphate (O-T-671)

Technical trisodium phosphate shall be a white, uniform product in finely granulated form, and shall contain not less than 95 per cent of crystalline trisodium phosphate ($Na_3PO_4 \cdot 12H_2O$).

It shall be a white, uniform, finely granulated product. Total alkalinity to methyl orange indicator, calculated as Na_2O, shall be not less than 15.5 per cent or more than 20 per cent. Phosphoric anhydride (P_2O_5) shall be not less than 17.7 per cent. Matter insoluble in distilled water shall not exceed 0.1 per cent. No residue shall be retained on a No. 10 sieve (sieve opening=0.0787 inch) and the residue retained on a No. 100 sieve (sieve opening=0.0059 inch) shall be not less than 50 per cent.

Soda Ash (O-S-571)

Soda-ash shall be of two grades as specified: Grade A—58 per cent ordinary (or light); Grade B—58 per cent dense.

Soda-ash shall be the high grade anhydrous sodium carbonate in powdered form and shall be the grade specified by the purchaser. It shall conform to the following requirements:

Total alkalinity of the material after drying for one hour at 150° to 155° C. shall be not less than 58 per cent calculated as Na_2O;

equivalent to 99.2 per cent of sodium carbonate (Na_2CO_3). Hydroxide (NaOH), after drying the material for one hour at 150° to 155° C. shall not exceed 0.1 per cent. Bicarbonate, after drying the material for one hour at 150° to 155° C., shall not exceed 0.5 per cent. Matter insoluble in water, after drying the material for one hour at 150° to 155° C., shall not exceed 0.25 per cent. The total sulphur calculated as sodium sulphide (Na_2S), after drying the material for one hour at 150° to 155° C., shall not exceed 0.1 per cent. Loss in weight on heating the material as received at 150° to 155° C. for one hour shall not exceed 1 per cent.

Grade A—Thirty grams of the light soda-ash (grade A) as received shall have a volume of from 55 to 65 milliliters.

Grade B—Thirty grams of the dense soda-ash (grade B) as received shall have a volume of from 30 to 40 milliliters.

Sodium Fluoride (O-S-601)

Sodium fluoride shall be a good grade commercial product in the form of a uniform, fine, dry, white powder, suitable for dusting, free from lumps or gritty material and practically free from matter insoluble in water. It shall contain not less than 90 per cent of sodium fluoride, NaF, the remaining 10 per cent to consist of the usual impurities in a good grade of commercial sodium fluoride, such as sodium silico-fluoride, sodium bifluoride, sodium carbonate, sodium chloride, sodium sulfate, etc.

Insect Powder (O-P-571)

Insect powder shall consist of the powdered flower heads of Chrysanthemum (Pyrethrum) cinerariæfolium (Trev. Bocc.). It shall be a product resulting from the reduction to an impalpable powder of insect flower heads of the species named and free from added stems and other adulterants. It shall be made of flowers that have been properly harvested and cured so as to retain the maximum insecticidal efficiency and are free from mold, and the powder shall have the characteristic color and odor. It shall not contain insect flower stems in excess of the amount occurring attached to flowers as harvested, and in no case in excess of 5 per cent. It shall not contain more than 2 per cent of ash insoluble in dilute hydrochloric acid.

Floor Wax (P-W-141)

Floor wax, when applied in accordance with the manufacturer's directions, shall dry to a film that polishes easily to a hard flexible surface of a soft wax sheen. It shall not be so highly colored as to stain the surface; and shall dry within 20 minutes to a semitransparent nontacky film which shall show no signs of whiteness. Floor wax shall consist essentially of blended waxes in a volatile solvent. It shall be free from oil, soap, or rosin.

Type I (liquid).—Shall be a heavy bodied liquid mixture of sufficient fluidity to permit freedom of application at 20° to 25° C. There shall be no appreciable settling of the suspended material. The liquid floor wax shall be smooth and shall be free from all lumpy particles and granules. There shall be not less than 11 per cent, by weight, of nonvolatile matter in the liquid floor wax. The nonvolatile material shall meet the following requirements.

	Minimum	*Maximum*
Softening point...	71°C.	..
Acid value	..	8
Saponification value	20	70
Ash content, per cent.....	..	0.5

The liquid vehicle shall consist of volatile solvents, such as turpentine, volatile mineral spirits, etc. The flash point of the volatile solvent shall be not less than 28° C. (closed cup).

Type II (paste).—Shall be a semisolid material at 20° to 25° C. There shall be no separation of liquid from paste. The paste shall be perfectly smooth and shall be free from lumpy particles and granules. There shall be not less than 20 per cent, by weight, of nonvolatile matter in the paste floor wax. The nonvolatile material shall meet the following requirements:

	Minimum	*Maximum*
Softening point...	71°C.	..
Acid value	..	8
Saponification value	20	70
Ash content, per cent	..	0.5

The liquid vehicle shall consist of volatile solvents, such as turpentine, volatile mineral spirits, etc. The flash point of the volatile solvent shall be not less than 28° C. (closed cup).

United States Fat and Oil Tariff Rates and Excise Taxes

Fat or Oil (1) VEGETABLE OILS AND FATS	*Duty* (2)	*Excise Tax on First Domestic Processing* (6)
Copra	Free	—
Coconut oil from or produced of materials from the Philippines or any other U. S. possession (7)	Free (3)	3c
other	2c per lb.	5c
Palm oil		
for tin plate	Free (8)	— (8)
other	Free (8)	3c (8)
Palm-kernel oil		
unfit for food	Free	3c
other	1c per lb.	3c
Fatty acids or salts of above	(4)	3c
Babassu oil	Free (9)	— (9)
Corn oil	20% ad valorem	—
Cottonseed oil	3c per lb.	—
Olive oil weighing with container less than 40 pounds	8c per lb.	—
rendered unfit for food	Free	—
n.s.p.f.	6½c per lb.	—
Peanut oil	4c per lb.	—
Fatty acids or salts of rape, sesame, sunflower, hempseed, linseed or perilla oils	(4)	4½c
Soybean oil	3½c per lb. but not less than 45% ad val.	—

(1) Whether or not refined, sulphonated, sulphated, hydrogenated, or otherwise processed.

(2) Products entering continental United States from "possessions" of the United States are free of duty, except that "following the inauguration of the Government of the Commonwealth of the Philippine Islands, Nov. 15, 1935, and pending complete independence (July 4, 1946), any coconut oil imported into the United States from the Philippines in excess of 200,000 long tons shall be subject to the same rate of duty as if imported from any other country."

Imports from foreign countries into Alaska, Hawaii, and Puerto Rico are subject to the tariff schedules of continental United States. The Philippines, Virgin Islands, American Samoa, and Guam, have separate tariff schedules of their own.

The tariff status of fats and oils, and oil materials produced in Cuba has not been determined at this date (July 1936). It depends upon future decisions as to the applicability of Article I of the Cuban Trade Agreement of Aug. 24, 1934, to each particular product. If and when one of these items is imported from Cuba a decision will be made as to whether it is or is not entitled

U. S. Fat and Oil Tariff Rates and Excise Taxes

Fat or Oil (1)	*Duty* (2)	*Excise Tax on Imports into United States Per Pound* (3)
ANIMAL FATS AND OILS		
Tallow	½c per lb.	3c
All other inedible animal oils, fats or greases n.s.p.f.	20% ad valorem	3c
fatty acids or salts of above	(4)	3c
MARINE ANIMAL AND FISH OILS—		
Herring, menhaden, and cod oils	5c per gal.	3c (5)
Whale (other than sperm) and seal oil	6c per gal.	3c (5)
All other fish and marine animal oils n.s.p.f.	20% ad valorem	3c (5)

Fat or oil combinations or manufactured articles (1)	*Duty* (2)	*Excise tax on first domestic processing* (6) *or on imports into United States* (3) *Per pound*
Any combination or mixture containing a substantial quantity of—(coconut oil, palm oil, or palm-kernel oil)	25% ad val. (10)	3c (11) (12)
fatty acids or salts of the foregoing	(4)	3c (11) (12)
Manufactured articles or combinations containing 10 percent or more by weight of—taxable fats and oils	25% ad val. (10)	3 or 4½c on oil content (11)
taxable fatty acids or salts of the foregoing.	(4)	3 or 4½c on oil content (11)
SOAP—		
Castile	15%	(11)
Other toilet	30%	(11)
All other, including soap powder	15%	(11)

to free entry. Information as to the actual tariff status at any given time of any product imported from Cuba may be obtained from the Division of Classification, Bureau of the Customs, Washington, D. C. In general, rates on dutiable Cuban products are 20 per cent less than the lowest rates accorded products of other foreign countries. In a few cases more than 20 per cent reduction is accorded to Cuba.

Under the Trade Agreements Act the concessions apply to articles the growth, produce, or manufacture of all foreign countries except countries declared by the President to be discriminating against the United States. Up to July 10, 1936, Germany and Australia are the only countries to be placed in this class and therefore the only countries not receiving the benefit of the rates proclaimed under the Trade Agreements Act.

(3) In this case "United States" means the States, the Territories Alaska and Hawaii, and the

District of Columbia (according to Sec.1111 (a) (10), Revenue Act of 1932, and Sec. 801 (a) (10), Revenue Act of 1934).

(4) Specific cases subject to Treasury Decisions as to classification, but probably as follows: fatty acids commercially known by name of specific acid (except oleic acid, that is "red oil"), 25 per cent ad valorem. Oleic acid and fatty acids not commercially known by name of acid, 20 per cent ad valorem, but if "foots" or waste unsought, dutiable at 10 per cent ad valorem. Salts subject to Treasury Decisions, probably 25 per cent ad valorem.

(5) Does not apply to product of American fisheries.

(6) According to a ruling of the Bureau of Internal Revenue (Reg. No. 48) "first domestic processing" means the first use in the United States of the oil or oils in the manufacture or production of an article intended for sale.

(7) "Possessions" of the United States include Philippine Islands, and the following designated as "non-contiguous territories," Alaska, Hawaii (including Midway Islands), Puerto Rico, Guam, American Samoa (including Swain Island), Wake Island (radio station), Panama Canal Zone, and Virgin Islands.

Hawaii and Alaska are technically designated as "Territories."

(8) Bound against change during life of Netherlands Trade Agreement, Feb. 1, 1936.

(9) "Bound" free from duty and tax during life of Brazilian Trade Agreement, Jan. 1, 1936.

(10) Combinations and mixtures of animal, vegetable, or mineral oils or of any of them (except combinations or mixtures containing essential or distilled oils) with or without other substances and n.s.p.f., but not less than the rate applicable to the component material subject to the highest rate of duty.

(11) Rate or rates applicable to particular mixtures or combinations or manufactured articles presumably will be indicated by Treasury Decisions on classification as need arises. Excise taxes do not apply to any item in the combination or mixture on which an import or first domestic processing tax has been previously paid.

(12) On first domestic processing.



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Comparative Values of Caustic Soda Solutions

% NaOH	% Na_2O	Bé 60° F.	Tw. 60° F.	Sp. Gr. 60° F. @ 60° F.	% NaOH	% Na_2O	Bé 60° F.	Tw. 60° F.	Sp. Gr. 60° F. @ 60° F.
1	.77	1.6	2.2	1.011	26	20.18	32.4	57.6	1.288
2	1.55	3.1	4.4	1.022	27	20.95	33.4	59.4	1.299
3	2.32	4.6	6.6	1.033	28	21.70	34.3	62.0	1.310
4	3.10	6.3	9.0	1.045	29	22.40	35.2	64.0	1.320
5	3.88	7.7	11.2	1.056	30	23.15	36.1	66.2	1.331
6	4.65	9.1	13.4	1.067	31	24.00	36.9	68.2	1.341
7	5.39	10.5	15.6	1.078	32	24.80	37.8	70.4	1.352
8	6.20	11.9	17.8	1.089	33	25.60	38.6	72.4	1.362
9	6.98	13.2	20.0	1.100	34	26.38	39.4	74.6	1.373
10	7.75	14.5	22.2	1.111	35	27.15	40.2	76.6	1.383
11	8.53	15.8	24.4	1.122	36	27.90	40.9	78.6	1.393
12	9.30	17.1	26.6	1.133	37	28.70	41.7	80.6	1.403
13	10.09	18.3	28.8	1.144	38	29.45	42.4	82.6	1.413
14	10.85	19.5	31.0	1.155	39	30.22	43.1	84.6	1.423
15	11.62	20.7	33.4	1.167	40	31.00	43.8	86.6	1.433
16	12.40	21.9	35.6	1.178	41	31.80	44.5	88.6	1.443
17	13.20	23.1	37.8	1.189	42	32.60	45.2	90.6	1.453
18	13.98	24.2	40.0	1.200	43	33.35	45.9	92.6	1.463
19	14.72	25.2	42.0	1.210	44	34.10	46.5	94.4	1.472
20	15.50	26.3	44.2	1.221	45	34.90	47.1	96.2	1.481
21	16.30	27.4	46.6	1.233	46	35.66	47.8	98.2	1.491
22	17.08	28.5	48.8	1.244	47	36.45	48.4	100.2	1.501
32	17.85	29.5	51.0	1.255	48	37.22	49.0	102.0	1.510
24	18.60	30.5	53.2	1.266	49	37.99	49.6	104.0	1.520
25	19.40	31.5	55.4	1.277	50	38.75	50.2	105.8	1.529

FATTY ACIDS IN SOAP OILS

Glycerides of Acids	Coconut Oil	Corn Oil	Cottonseed Oil	Linseed Oil	Olive Oil	Palm Oil	Palm Kernel Oil	Peanut Oil	Sesame Oil	Soyabean Oil	Tallow	Whale Oil
Arachidic	—	0.4	0.6	—	0.2	—	—	3.6	4.0	0.7	—	—
Lignoceric	—	0.2	—	—	—	0.1	—	2.9	0.4	0.1	—	—
Linolenic	—	—	—	34.1	—	—	—	—	—	2.2	—	—
Linoleic	—	39.1	42.0	48.5	3.9	9.5	1.0	23.1	35.2	49.3	—	20.0
Myristic	20.0	—	0.4	—	Trace	0.6	16.0	—	—	—	2.0	8.0
Oleic	2.0	43.4	35.0	5.0	83.1	43.2	16.5	56.7	46.0	32.0	44.5	25.0
Palmitic	7.0	7.3	20.0	2.7	9.2	44.0	6.5	7.3	7.3	6.5	29.0	12.0
Palmitoleic	—	—	—	—	—	—	—	—	—	—	—	17.0
Stearic	5.0	3.3	2.0	5.4	2.0	2.9	1.0	5.5	4.4	4.2	24.5	—

Coconut oil also contains 10% Capric, 2% Caproic, 9% Caprylic and 45% Lauric. Palm Kernel Oil contains 6% Capric, 3% Caprylic and 50% Lauric. Whale Oil contains 18% Clupandonic.

APPROXIMATE CONSTANTS OF SOAP OILS

Oil or Fat	Sp. Gr. (Water at 15°)	Sap. No.	Iodine Value	Titer °C.	% Non-Sap.
Castor Oil	0.958—0.968	177—187	83— 86	3°—	0.3—0.5%
Coconut Oil	0.926	251—263	8— 10	20°—23°	0.2
Corn Oil	0.921—0.927	186—193	120—130	15°—19°	1.5—3.0%
Cottonseed Oil	0.915—0.926	191—196	103—115	32°—38°	0.7—1.6%
Linseed Oil	0.931—0.938	189—196	170—204	19°—21°	0.5—1.6%
Olive Oil Foots	0.914—0.919	189—195	79— 86	17°—21°	2.0—3.0%
Palm Oil	0.921—0.925	196—205	48— 58	42°—45°	0.7—1.0%
Palm Kernel Oil	0.873/99°	244—255	16— 23	20°—25°	0.2—0.5%
Peanut Oil	0.911—0.926	185—192	83— 95	28°—30°	0.5—1.0%
Sesame Oil	0.920—0.926	188—193	103—115	21°—24°	1.0—1.8%
Soya Bean Oil	0.922—0.925	191—194	125—140	21°—24°	0.3—0.6%
Tallow (beef)	0.943—0.952	193—200	35— 47	43°—45°	
Whale Oil	0.922—0.926	188—194	110—150	22°—24°	1.0—3.0%

TEMPERATURE CONVERSION TABLE

Centigrade to Fahrenheit

Temp. °C.	0	1	2	3	4	5	6	7	8	9
0	+32.0	30.2	28.4	26.6	24.8	23.0	21.2	19.4	17.6	15.8
—10	+14.0	12.2	10.4	8.6	6.8	5.0	3.2	+1.4	—0.4	—2.2
—20	—4.0	5.8	7.6	9.4	11.2	13.0	14.8	16.6	18.4	20.2
—30	—22.0	23.8	25.6	27.4	29.2	31.0	32.8	34.6	36.4	38.2
—40	—40.0	41.8	43.6	45.4	47.2	49.0	50.8	52.6	54.4	56.2
—50	—58.0	59.8	61.6	63.4	65.2	67.0	68.8	70.6	72.4	74.2
—60	—76.0	77.8	79.6	81.4	83.2	85.0	86.8	88.6	90.4	92.2
—70	—94.0	95.8	97.6	99.4	101.2	103.0	104.8	106.6	108.4	110.2
—80	—112.0	113.8	115.6	117.4	119.2	121.0	122.8	124.6	126.4	128.2
—90	—130.0	131.8	133.6	135.4	137.2	139.0	140.8	142.6	144.4	146.2
—100	—148.0	149.8	151.6	153.4	155.2	157.0	158.8	160.6	162.4	164.2
0	32.0	33.8	35.6	37.4	39.2	41.0	42.8	44.6	46.4	48.2
10	50.0	51.8	53.6	55.4	57.2	59.0	60.8	62.6	64.4	66.2
20	68.0	69.8	71.6	73.4	75.2	77.0	78.8	80.6	82.4	84.2
30	86.0	87.8	89.6	91.4	93.2	95.0	96.8	98.6	100.4	102.2
40	104.0	105.8	107.6	109.4	111.2	113.0	114.8	116.6	118.4	120.2
50	122.0	123.8	125.6	127.4	129.2	131.0	132.8	134.6	136.4	138.2
60	140.0	141.8	143.6	145.4	147.2	149.0	150.8	152.6	154.4	156.2
70	158.0	159.8	161.6	163.4	165.2	167.0	168.8	170.6	172.4	174.2
80	176.0	177.8	179.6	181.4	183.2	185.0	186.8	188.6	190.4	192.2
90	194.0	195.8	197.6	199.4	201.2	203.0	204.8	206.6	208.4	210.2
100	212.0	213.8	215.6	217.4	219.2	221.0	222.8	224.6	226.4	228.2
110	230.0	231.8	233.6	235.4	237.2	239.0	240.8	242.6	244.4	246.2
120	248.0	249.8	251.6	253.4	255.2	257.0	258.8	260.6	262.4	264.2
130	266.0	267.8	269.6	271.4	273.2	275.0	276.8	278.6	280.4	282.2
140	284.0	285.8	287.6	289.4	291.2	293.0	294.8	296.6	298.4	300.2
150	302.0	303.8	305.6	307.4	309.2	311.0	312.8	314.6	316.4	318.2
160	320.0	321.8	323.6	325.4	327.2	329.0	330.8	332.6	334.4	336.2
170	338.0	339.8	341.6	343.4	345.2	347.0	348.8	350.6	352.4	354.2
180	356.0	357.8	359.6	361.4	363.2	365.0	366.8	368.6	370.4	372.2
190	374.0	375.8	377.6	379.4	381.2	383.0	384.8	386.6	388.4	390.2
200	392.0	393.8	395.6	397.4	399.2	401.0	402.8	404.6	406.4	408.2

Shipping Terms

Glossary of Shipping Terms and Abbreviations in Common Use:

C. I. F.—Cost, insurance and freight. This term usually covers merchandise which is sold on a delivered basis at port of or point of destination, whereby the shipper or supplier pays the freight and insurance and adds the cost of selling price at point of origin.

C. I. F. E.—Cost, insurance, freight and exchange. Same as above except that differences in the exchange are contemplated.

C. & F.—Cost and freight. Same as C. I. F., except that the insurance is covered by consignee or others.

F. A. S.—Free along shipside. Means that the goods are delivered free of transportation expense by the shipper and/or principal to the loading pier or within reach of the ship's tackle by lighter, car or truck.

F. O. B.—Free on board. The use of this term should be qualified by stipulating, just where it applies whether it be in the interior "on cars" or at some other point or port, otherwise the term is capable of different interpretations.

C. I. T.—Customs in transit. Foreign business moving in bonded cars or trucks, as for instance, freight enroute from Canada, through United States ports for export—on which no import or export duty is charged.

N. O. S.—Not otherwise specified. Used in freight classifications on certain items, which may be otherwise or more specifically covered by another item in the same classification.

S/O.—Ship's option. When applied to a rate, it means that the ship or carrier may base the rate on the weight or the volume—whichever produces the greater revenue. Frequently, this term is applied to the ship's judgment as to stowage—"on" or "under" deck. This applies more particularly to freight, which is considered inflammable, explosive, corrosive, extremely bulky, etc. Of course, the "on" deck stowage commands a higher insurance premium in the ocean carriage than the "under" deck stowage.

C. W. T.—Hundred weight—112 pounds. One twentieth of a gross ton.

W/M.—Weight or measurement. This general term applies on ocean freight, whether it be based on so much per 100 pounds or one cubic foot. Also, it is applicable when the over-seas rate is predicated on a weight or measurement ton.

Freight Ton.—2,240 pounds or forty cubic feet, ship's option. (In some tariffs a freight ton is based on 2,000 pounds or forty cubic feet, ship's option.)

Weight Ton.—Usually based on 2,240 pounds, irrespective of measurement, although some ocean tariffs, particularly intercoastal and to the Far East, predicate the ton on 2,000 pounds.

Measurement Ton.—40 cubic feet.

F. P. A.—Free of particular average. (Insurance term.)

Force Majuer.—Major force. (A bill of lading term indicating a force beyond the ship's control.)

E. & O. E.—Errors and omissions excepted.

S. F.—A superficial, often called a "board foot" which is a lumber term meaning one foot long, one foot wide and one inch thick. This is used in the measurement of heavy lumber or timber as well as on planed lumber.

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Security Act Data

The first column records total earnings from the time payroll tax becomes effective until the worker reaches the retirement age of 65. The second column shows monthly benefits the worker will receive after reaching 65. (No such payment will be made prior to Jan. 1, 1942.) The third column indicates the lump sum payment which would accrue to the worker's estate if he died before receiving any benefits. If the amount received prior to death is less than this aggregate sum, the difference between the benefits paid and the amount in Column 3 is payable to the estate.

Total Wages.	Monthly Benefit.	Lump Payment.	Total Wages.	Monthly Benefit.	Lump Payment.	Total Wages.	Monthly Benefit.	Lump Payment.
$2,000	$10	$70	$27,000	$35	$945	$71,400	$61	$2,499
2,200	11	77	28,200	36	987	73,800	62	2,583
2,400	12	84	29,400	37	1,029	76,200	63	2,667
2,600	13	91	30,600	38	1,071	78,000	64	2,751
2,800	14	98	31,800	39	1,113	81,000	65	2,835
3,000	15	105	33,000	40	1,155	83,400	66	2,919
4,200	16	147	34,200	41	1,197	85,800	67	3,003
5,400	17	189	35,400	42	1,239	88,200	68	3,087
6,600	18	231	36,600	43	1,281	90,600	69	3,171
7,800	19	273	37,800	44	1,323	93,000	70	3,255
9,000	20	315	39,000	45	1,365	95,400	71	3,339
10,200	21	357	40,200	46	1,407	97,800	72	3,423
11,400	22	399	41,400	47	1,449	100,200	73	3,507
12,600	23	441	42,600	48	1,491	102,600	74	3,591
13,800	24	483	43,800	49	1,533	105,000	75	3,675
15,500	25	525	45,000	50	1,575	107,400	76	3,759
16,200	26	567	47,400	51	1,659	109,800	77	3,843
17,400	27	609	49,800	52	1,743	112,200	78	3,927
18,600	28	651	52,200	53	1,827	114,600	79	4,011
19,800	29	693	54,600	54	1,911	117,000	80	4,095
21,000	30	735	57,000	55	1,995	119,400	81	4,179
22,200	31	777	59,400	56	2,079	121,800	82	4,263
23,400	32	819	61,800	57	2,163	124,200	83	4,347
24,600	33	861	64,200	58	2,247	126,600	84	4,431
25,800	34	903	66,600	59	2,331	129,000	85	4,515
			69,000	60	2,415			

The rates of employers' tax applicable for the respective calendar years are fixed as follows:

	Per cent
For 1937, 1938, and 1939	1
For 1940, 1941, and 1942	1½
For 1943, 1944, and 1945	2
For 1946, 1947, and 1948	2½
For 1949 and subsequent years	3

The employers' tax is computed by applying to the wages paid by the employer the rate in effect at the time of the performance of the services for which the wages were paid.

The same schedule of rates applies on the employees' tax. The employer is made liable for payment of taxes due from his employees, with the provision that he shall deduct the proper amount from employees' wages when they are paid. Tax returns are to be made monthly by employers beginning with January, 1937. A special form SS-1 is provided for this purpose, to be filed in quadruplicate.

Every employer liable for tax must keep accurate records of all remuneration paid to employees after Dec. 31, 1936, for services performed after this date. Such records shall show—

(1) name and address of employee and the account number assigned to the employee under the Act,

(2) occupation of employee,

(3) the total amount (including any sum withheld therefrom as tax or for any other reason) and date of each payment and the period of services covered by such payment,

(4) the amount of such payment which constitutes wages subject to tax (see sections 811 (a) and 1101 (c) of the Act and articles 14, 15, and 16),

(5) amount of employees' tax withheld or collected with respect to such payment, and, if collected at a time other than the time such payment was made, the date collected.

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